

NOLOGY DEPT

Construction Methods

NOVEMBER 1946

Derrick lowers blasting mat into shaft
on Philadelphia tunnel after rolling
platform has been moved into position
for protection against flying rock

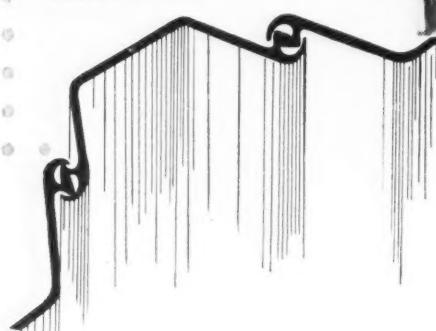
New Atlantic City Boardwalk of Precast Units . . . Rolling Platform Protects Shaft During Blasting . . . Truck Crane Parks Beam on High Building in Two Lifts . . . Pre-Steam Equipment Cleaning before Overhaul . . . Temporary Housing Foundations . . . 40 Miles of Radiant Heating Pipes

ACCOUNTING FOR CONTRACTORS

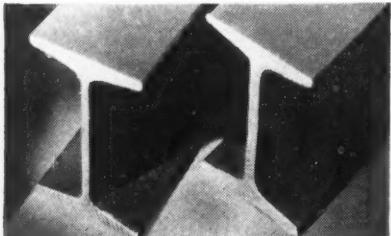
THIRD OF A SERIES



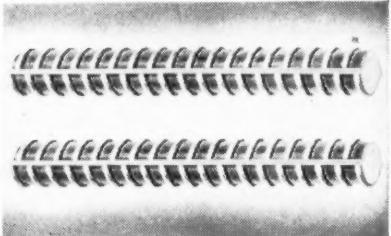
THIS INTERLOCKING GRIP MEANS—



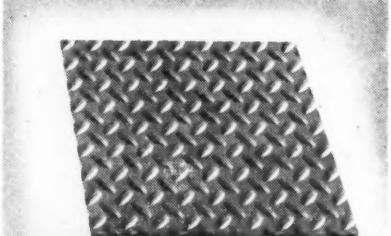
For the Contractor—Inland also supplies:



I-Beams and other structural shapes—

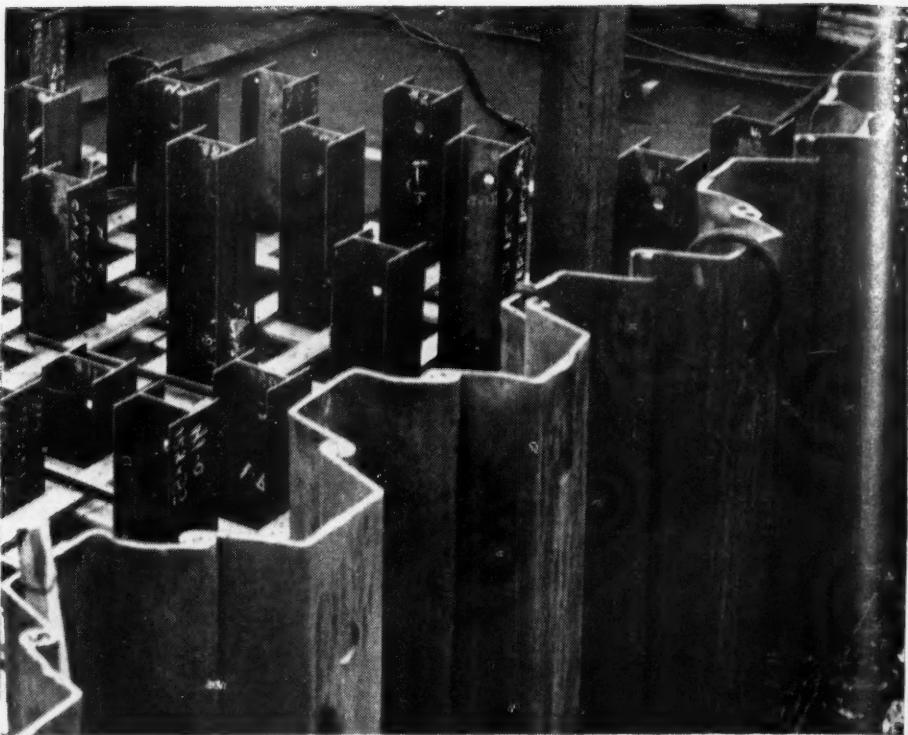


Hi-Bond concrete reinforcing bars—



4-Way safety steel floor plate—

SHEETS • STRIP • TIN PLATE • BARS • PLATES • RAILS • TRACK ACCESSORIES



INLAND PILING IS ON THE JOB

The construction industry knows and appreciates this popular interlocking grip and the other advantages of Inland sheet piling. Straight—strong and tough, it drives freely, produces water-tight cofferdams under pressure, and can be pulled and redriven time after time. Actual cases are on record where Inland Piling has been reused as many as fifteen times.

Accurately rolled with uniform high quality, Inland sheet piling is made of special analysis steel for extreme strength and resistance to corrosion. Eight different sections are available for various applications on single or double wall cofferdams, cellular breakwaters, docks, bulkheads or retaining walls. Piling may also be rented, when available.

Inland engineers are at your service to assist—in design, layout and selection of proper material for your installations. They may also be able to help you with practical operating suggestions. Call on them at any time.

ILLUSTRATION ABOVE: Inland sheet piling used on cofferdam for Illinois river bridge. Great Lakes Dredge & Dock Co., Contractors.

INLAND STEEL

INLAND STEEL COMPANY, 38 South Dearborn Street, Chicago 3, Illinois. Sales Offices: Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Paul, St. Louis

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Cuts and Fills

IN THESE DAYS of soaring construction costs engineers might well examine their designs to see if they unnecessarily contribute to high costs. Because of current high prices of lumber and carpenter wages, forms are the most expensive item in concrete work. Yet designers continue to turn out plans calling for complicated formwork that adds nothing to the appearance or utility of the structure.

We have in mind a high viaduct being built across a proposed reservoir. Fundamentally the design is simple—high two-shaft concrete piers carrying steel truss and beam spans. Yet for no good reason some of the shafts are round, where steel forms may be used, but others are square, requiring additional forms of wood. Forms on the square shafts are further complicated by different batters on the piers, denying re-use of forms and requiring complete wrecking and rebuilding for each pier.

Specs say that the contractor must rub the high piers though they will be mostly under water. The bridge railing is a concrete wall with numerous hard-to-form windows that greatly increase the cost. Why some of the piers are skewed while others are normal to centerline is another mystery, but still a costly item.

Whoever designed this job missed many opportunities for economy, and the tax-paying public is stuck for a lot of useless work.

* * *

UNCERTAIN as contracting is today, it would seem that contractors would take every protection offered by the specs. Yet a big Missouri firm, neglecting to state "all or none" in bidding a four-proposal airport job was handed a \$1,000 fence as one proposal while others got the main work. Of course, fencing is hard to obtain, so there were long delays. Then the contracting officer asked the bidder to delay even further until the grading was finished. Eventually the job was completed at a cost of \$1,600. But now the bewildered contractor has been assessed \$2,200 as liquidated damages because of all the delays. At last reports, he is no longer interested in fence building as a business.

* * *

HOUSING is lagging despite controls piled upon more controls, increasing curtailment of other construction, and channeling more materials exclusively to housing. Perhaps the A.G.C. has the answer, expressed at its recent Philadelphia meeting—remove all controls from all construction and let housing assume its natural place in the building field.

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JAMES H. McGRAW, Founder and Honorary Chairman

Editorial and Publishing Offices: 330 West 42nd St., New York (18); 520 North Michigan Ave., Chicago (1); 68 Post St., San Francisco (4); 738-9 Oliver Bldg., Pittsburgh; Aldwych House, London, W. C. 2, England. Branch Offices: Washington; Philadelphia; Cleveland; Detroit; St. Louis; Boston; Los Angeles; Atlanta, Ga.

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CONSTRUCTION METHODS, November, 1946. Volume 28, Number 11. Published Monthly, price 25c a copy. **Return Postage Guaranteed.** Allow at least ten days for change of address. All communications about subscriptions should be addressed to the Director of Circulation, 330 West 42nd Street, New York (18), N. Y. **Subscription rates**—United States and possessions \$2.00 a year, \$3.00 for two years, \$4.00 for three years; Canada \$3.00 a year, \$5.00 for two years, \$6.00 for three years; Pan American countries \$6.00 for one year, \$10.00 for two years, \$12.00 for three years. All other countries, \$15.00 a year, \$30.00 for three years. Please indicate position and company connection on all subscription orders. Entered (or reentered) as second class matter December 16, 1936, at the Post Office of New York, N. Y., U. S. A., under the act of March 3d, 1879. Printed in U. S. A. Cable address: "McGrawhill" New York. Member of A. B. P. Member of A. B. C. Contents copyrighted 1946 by McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York (18), N. Y.—All rights reserved.

Construction Methods

The Construction Magazine With Picture Power

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NOVEMBER, 1946



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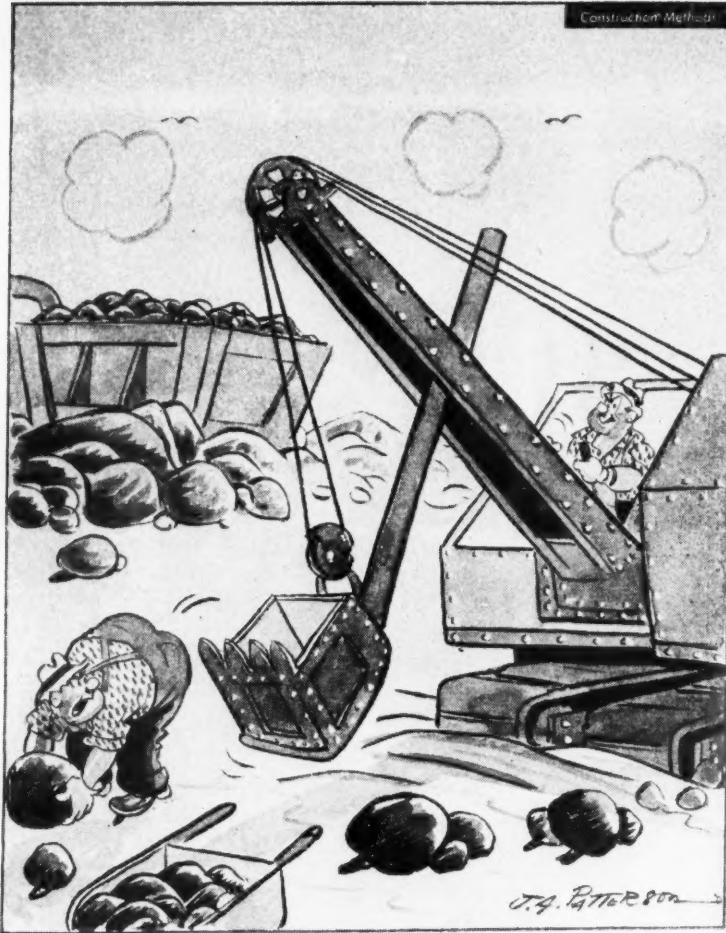


• RUGGED • THAT'S A-C 2-CYCLE DIESEL TRACTOR POWER!



THE JOB JESTER

CARTOONS DRAWN FOR CONSTRUCTION METHODS



"I just double dare you to!"



"I suppose you gentlemen are wondering where I got the idea for my piledriver."



Construction Methods

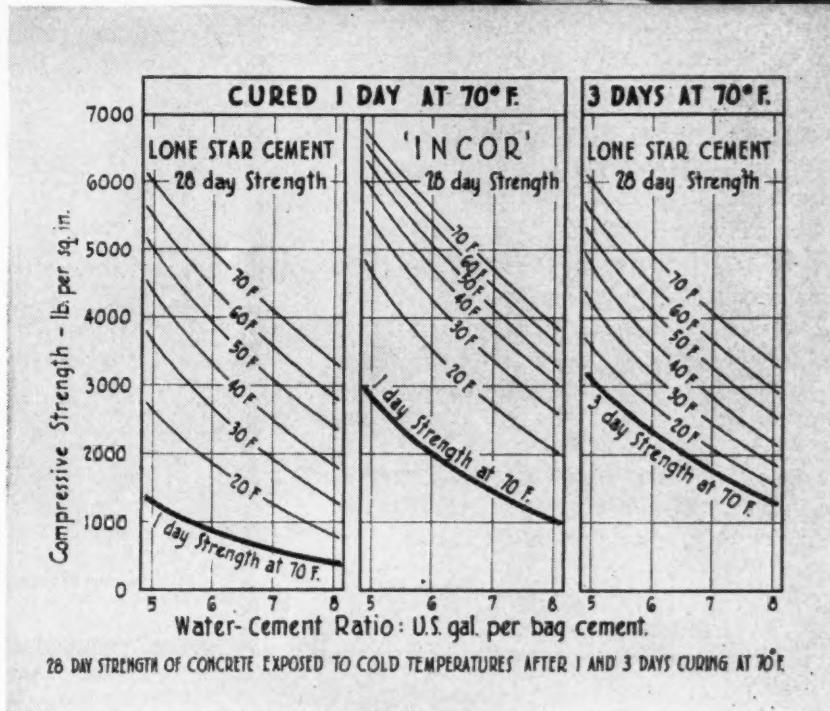
COLD FACTS

ABOUT 'INCOR' WINTER ECONOMIES

SKYROCKETING COSTS—form lumber, labor, heating fuel, tarpaulins—put a premium on job planning with 'Incor' 24-Hour Cement. At today's costs, 'Incor' savings are bigger than ever. Heat-cured only one day at 70°, 'Incor' concrete is service-strong, safe from freezing . . . and at 28 days produces strengths 25% to 30% greater than even Lone Star Cement cured 3 days. Use 'Incor'* and you save two days heat-curing on each pour . . . cut form and tarp costs in half . . . reduce freezing risks . . . keep job speed up, job costs down.

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JOHN A. ROEBLING'S SONS COMPANY
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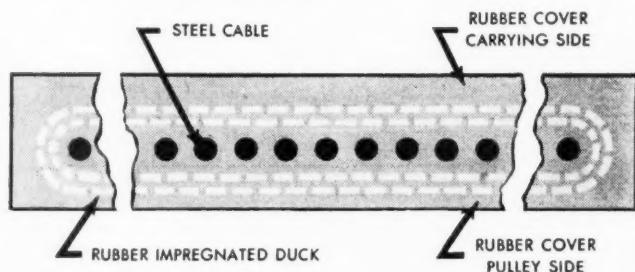
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Roebling "Steelply" is the load-carrying core in this revolutionary new kind of conveyor belting. It consists of small-diameter steel cables . . . finely stranded, extremely flexible, practically stretchless . . . encased in sturdy, rubber-impregnated duck. "Steelply" is also used to strengthen elevator belts, V-belts, flat transmission belts, heavy-duty hose and truck tires.



The Strength of Steel PLUS The Resilience of Rubber

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Model F
Rear-Dump
Euclid



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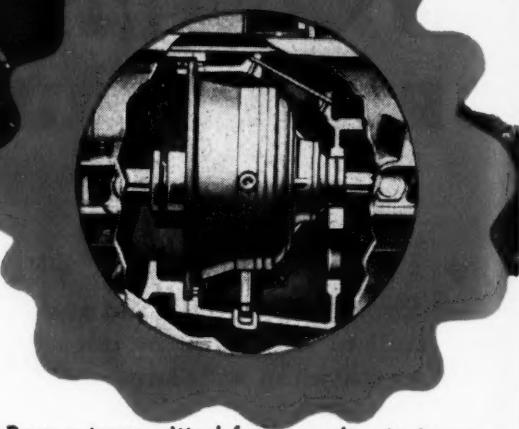
The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

EUCLIDS    *Move the Earth*

New Torque Converter Bulldozer



More Power
More Push
More Profit



Here is extra power and push—extra capacity and production for any bulldozing job. A Baker bulldozer, powered by the sensational Allis-Chalmers HD14-C Torque Converter Tractor provides smooth cushioned power; automatic co-ordination of travel speed and maximum power to load and ground conditions; an infinite number of travel speeds with less gear shifting; increased torque; less operator fatigue, and easier, more accurate blade control. Exclusive, definite advantages which mean increased output, longer blade and tractor life and lower over-all operating costs.

Available with Baker Cable or Hydraulic Bulldozers and Gradebuilders—front or rear mounted controls.

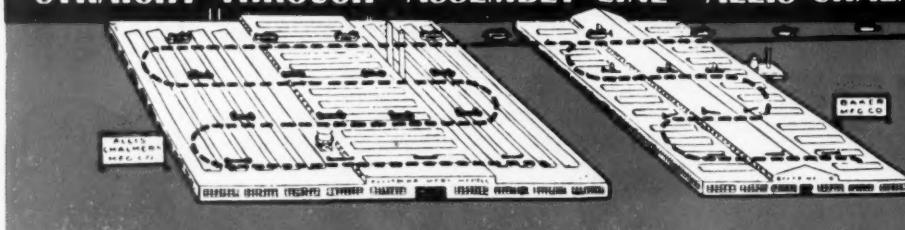
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Power transmitted from engine to transmission through three stage oil turbine, automatically balancing torque against speed to meet load conditions.

BAKER



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A development of
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You can START RIGHT HERE...

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BEGINNING at the moment its convenient 13-foot lengths are loaded onto the trucks ... continuing during its rapid assembly in the trench ... and lasting throughout its long years of service, Transite Sewer Pipe makes important contributions to more efficient, economical sewage disposal.

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Corrosion-resistant—outside, inside and all the way through! Transite's asbestos-cement composition, its homogeneous, dense structure and its low free-lime content result in a high degree of corrosion-resistance.

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Further details on Transite Sewer Pipe for gravity lines are given in Brochure TR-21A; on Transite Pressure Pipe for force mains, in TR-13A. For copies, write Johns-Manville, 22 East 40th St., New York 16, N. Y.

Johns-Manville

TRANSITE SEWER PIPE
for gravity lines



TRANSITE PRESSURE PIPE
for force mains



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Northwest crowd!*

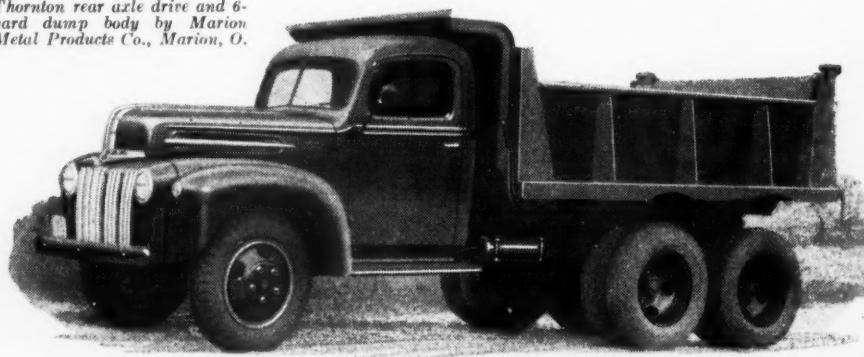
*If you have
a REAL
ROCK SHOVEL
you never
have to
worry about
output in
dirt!*

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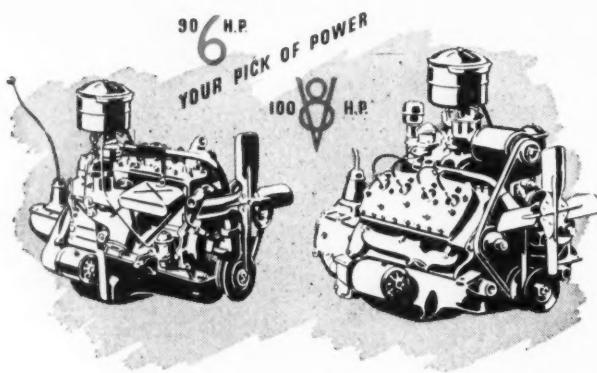
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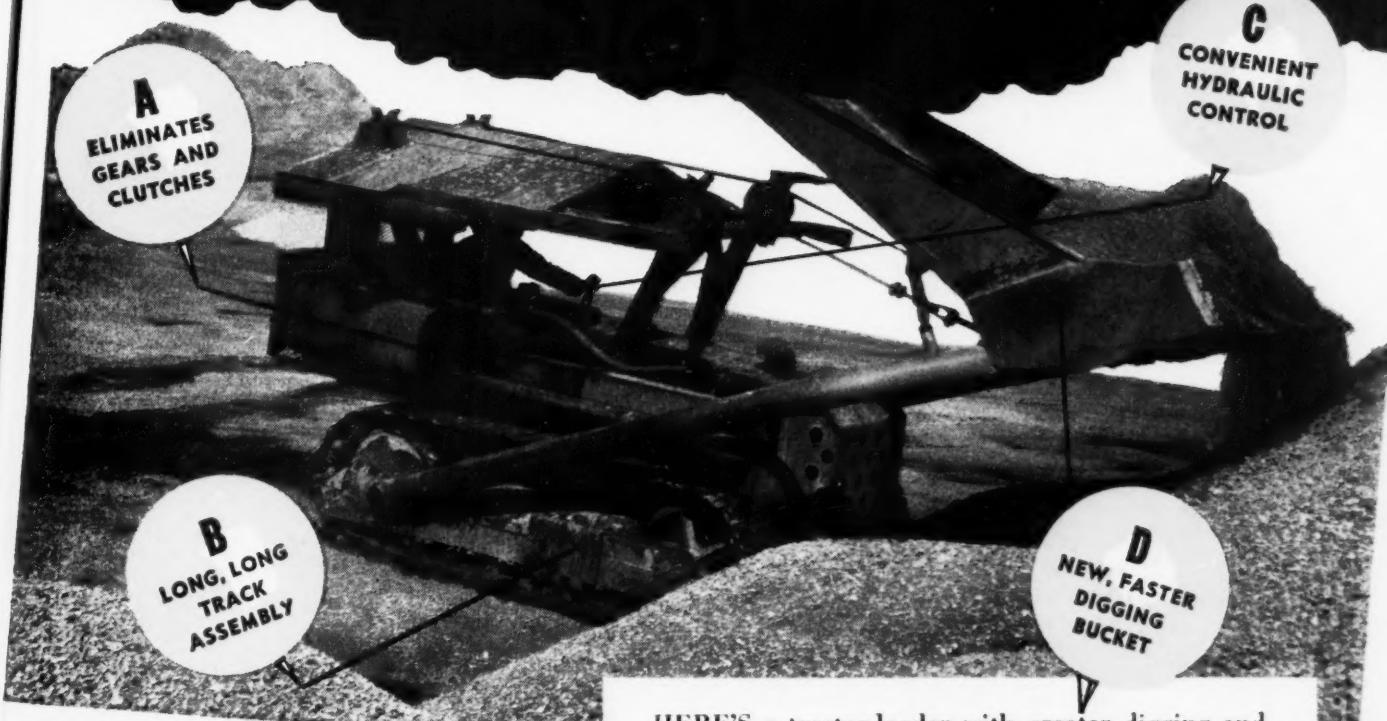
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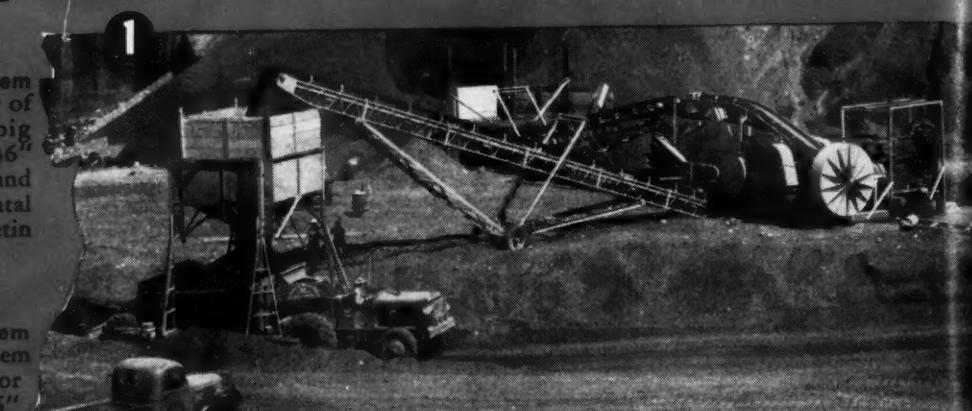
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when you buy a crushing p

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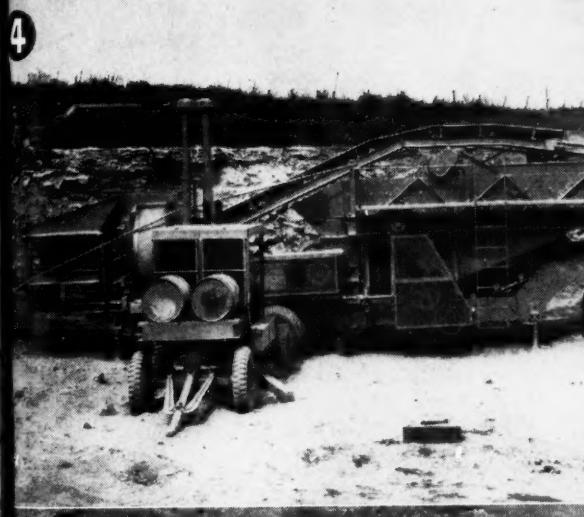
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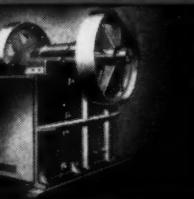
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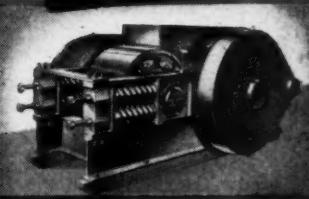


ING COMPANY

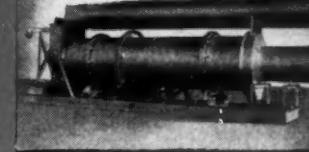
Iowa also makes a complete line of portable and stationary batch type and continuous mix type asphalt plants and equipment. For the best in asphalt mixing equipment—Buy Cedarapids.



Jaw Crushers



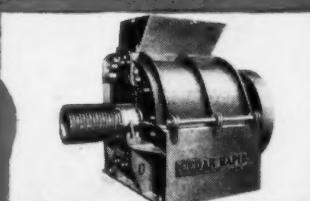
Roll Crushers



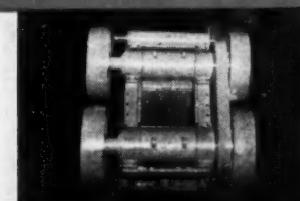
Driers



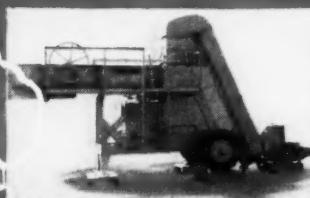
Pug Mills



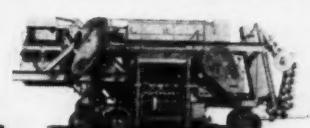
Hammermills



Twin Jaw Crushers



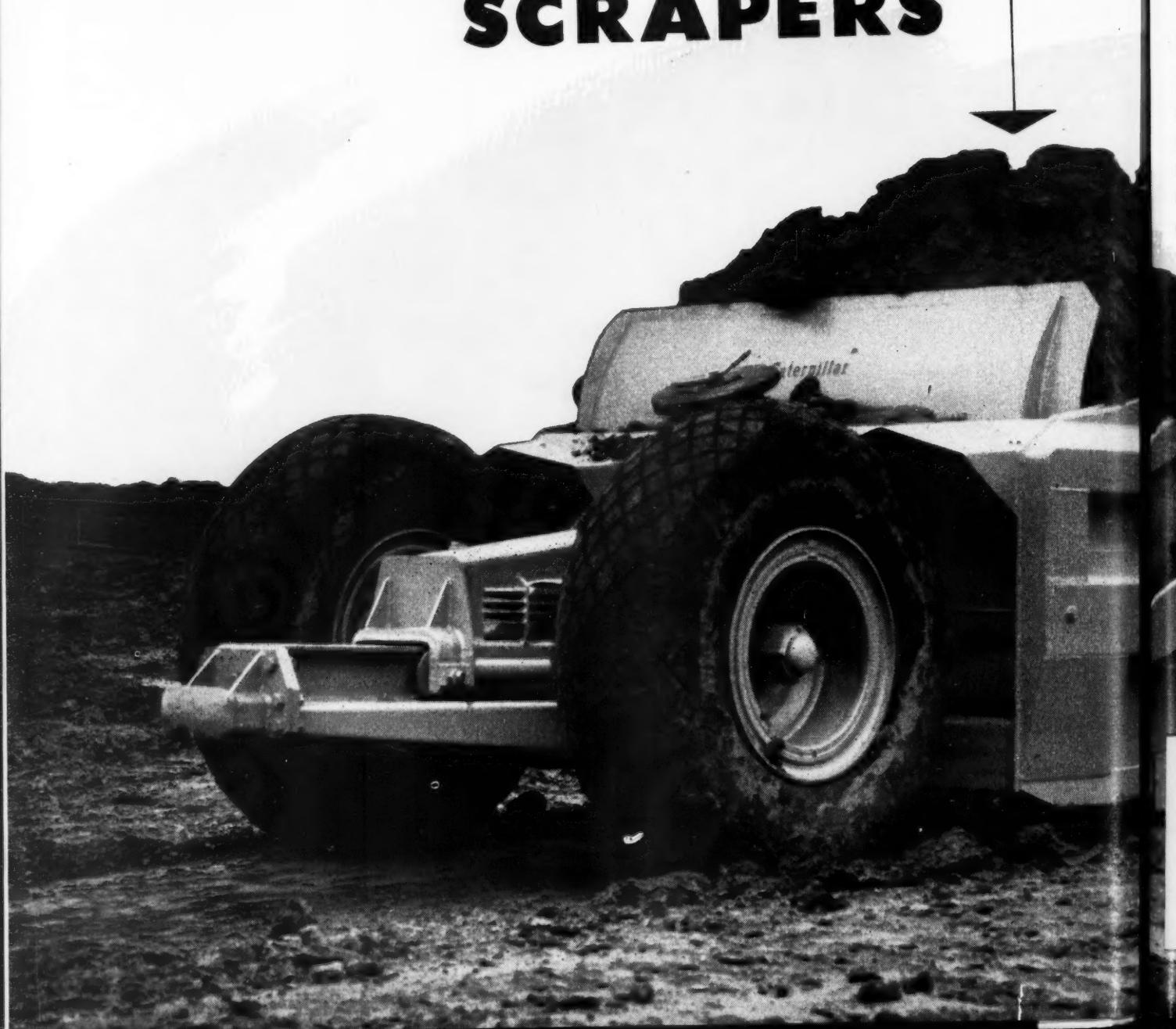
**Patchmaster
Asphalt Plant**



**Model "F"
Asphalt Plant**

You'll move
more yardage

WITH "CATERPILLAR"
SCRAPERS



HERE are facts—proved on the job—that show why the new "Caterpillar" Scrapers move more earth—faster—at lower cost.

BOILING ACTION. The design of the bowl and blade-edge boil earth upward through the middle instead of forcing it up and over the sides before the middle is full. That's why "Caterpillar" Scrapers load easier, top out better. This feature means more yards per hour. The blade cuts faster and easier on hard ground and contributes to central boiling action in the bowl.

SPREADING. The big apron opening is another feature of "Caterpillar" design. It gives positive, clean ejection. Results in faster unloading—no hanging up or sticking—and more trips per hour.

Oversize TIRES. Scrapers always pull easier on bigger tires. "Caterpillar" recognizes this and equips its scrapers with oversize tires. On soft ground, off the road, the larger tires permit lower inflation, more tread area to absorb the weight, better flotation and higher hauling speeds. That means easier hauling, increased yardage and lower costs—plus extra tire life.

STRONG CONSTRUCTION. Rugged design, superior materials and expert workmanship increase durability. These scrapers are built to last. They have welded construction and high-tensile steels throughout. Rugged-rib bracing of the heavy double-bottom plate is provided for increased strength and wear.

NEW "CATERPILLAR" CABLE CONTROL. Sure-acting and fast. Matched to the load. Oversize machined and heat-treated sheaves and correct reeving give longer cable life.

OPEN BOWL. "Caterpillar" design achieves maximum strength without the drawbacks of an overhead frame. The operator has good visibility for loading and spreading, and the scrapers can be shovel-loaded, an important feature on many jobs.

Factory production of the new "Caterpillar" Scrapers and Bulldozers is steadily increasing. See your "Caterpillar" dealer now—talk to him about the advantages of a full line of matched earth-moving equipment—and get your order in early.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS



CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

KEEP ENGINES



Tune in . . .
TEXACO STAR THEATRE
presents the NEW
EDDIE BRACKEN SHOW
every Sunday night.
Metropolitan Opera
broadcast every
Saturday afternoon.



TEXACO

CLEAN...

ASSURE TROUBLE-FREE, ECONOMICAL PERFORMANCE

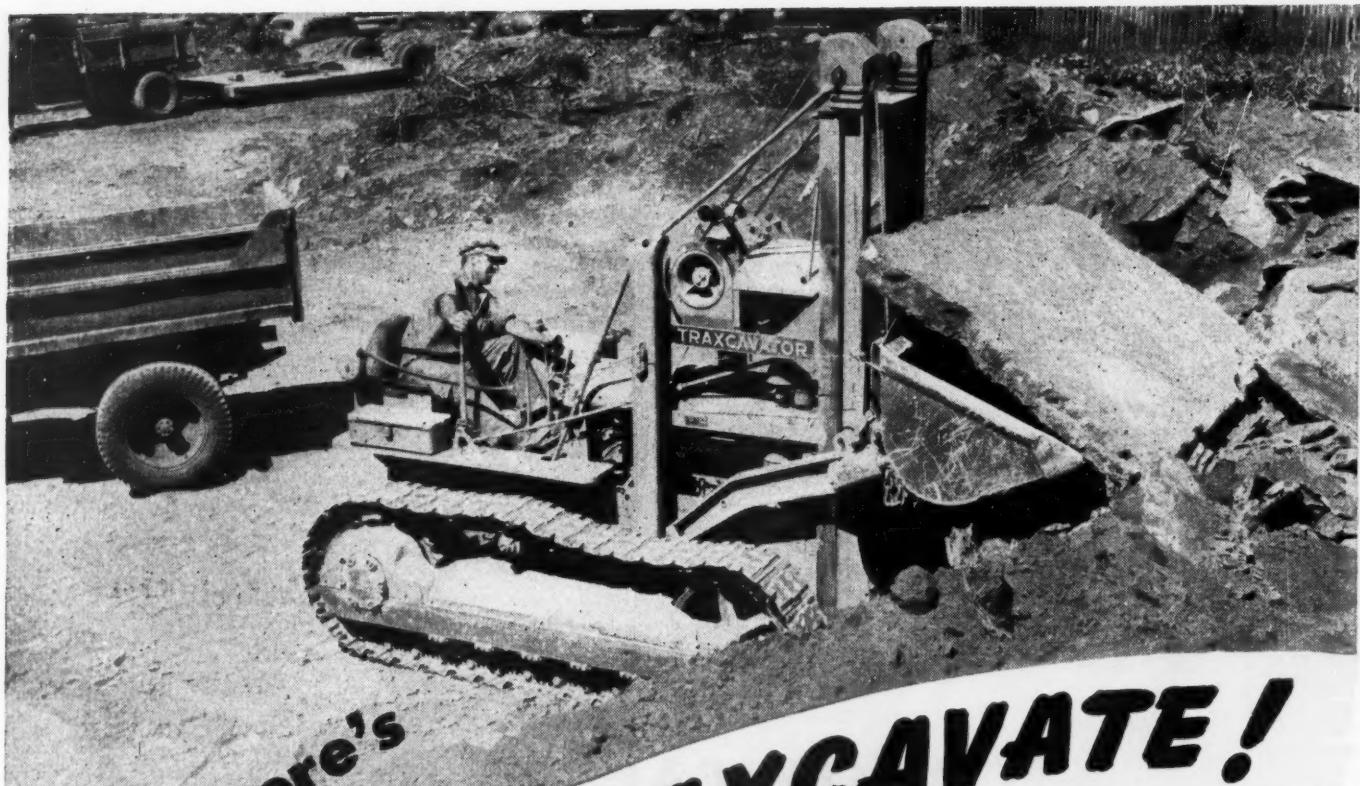
To keep your heavy-duty gasoline and high-speed Diesel engines operating more efficiently, use the oil that keeps engines *clean* — *Texaco Ursa Oil X***

*Texaco Ursa Oil X*** has strong detergent and dispersive qualities and high resistance to oxidation. It keeps rings free, assuring better compression and combustion — greater power and fuel economy. It protects alloy bearings, prevents scuffing of rings, pistons and cylinders — greatly reduces engine wear and maintenance costs.

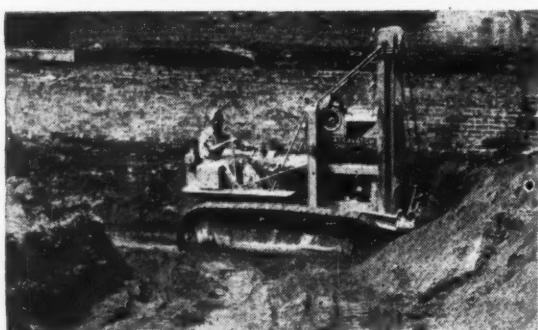
For Texaco Products and Lubrication Engineering Service, call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

IMPROVED AIR COMPRESSOR OPERATION
Get more efficient performance from your air compressors by lubricating them with *Texaco Alcaid, Algol or Ursa Oil*. These world-famous oils keep rings free, valves active, ports open and air lines clear — assure fewer repairs and replacements, longer compressor life.

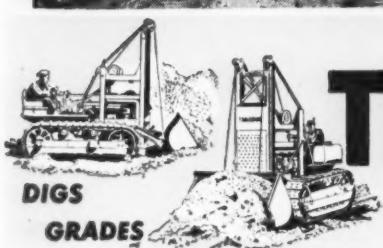
Lubricants and Fuels FOR ALL CONTRACTORS' EQUIPMENT



**When there's
WORK
to do... TRAXCAVATE!**



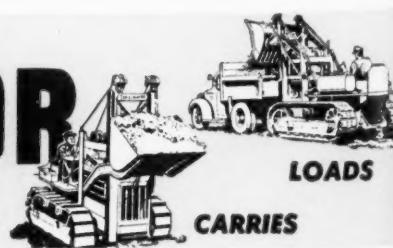
Work is the word for TRAXCAVATORS! They're built to do *more* of it. Assign them to most any construction job and see the amazing number of tasks TRAXCAVATORS can perform. Pictured here is a Model IT4 ripping up and loading old concrete pavement and excavating for a new building; two T7s, with $2\frac{1}{2}$ yard buckets, grading and leveling a tank site; an IT4 doing a close-quarter excavating job. There's versatility in TRAXCAVATORS — the kind that cuts corners on every contract — saves time and labor — turns an *extra* profit your way. Your TRACKSON—"Caterpillar" dealer can show you how it pays to *Traxcavate* and why TRAXCAVATORS do more work on more jobs at lower cost. He can help you select the size best suited to your particular needs. See him today, or write direct to TRACKSON COMPANY, Dept. CM-116, Milwaukee 1, Wis.



TRAXCAVATOR

REG. U. S. PAT. OFF.

THE ORIGINAL TRACTOR EXCAVATOR



So what about this tire?

IT'S ROUGH!

This FIRESTONE GROUND GRIP TIRE has carried tens of thousands of cubic yards of dirt over the rockiest haul roads to be found in the western Mountain States. No down time has ever been charged against this tire.

IT'S TOUGH!

Those massive tread bars have absorbed the most grueling punishment a tire can be asked to take, have protected the body from blows and cuts. Double thick sidewalls have resisted snagging, cutting and rutwear.

IT'S READY FOR MORE!

This FIRESTONE GROUND GRIP, having already delivered many more hours of service than normally expected on this type of operation, is ready to roll — will carry many more thousands of tons of payload.



Firestone
OFF-THE-HIGHWAY TIRES



GROUND GRIP • ROCK GRIP • EARTH MOVER

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November 1946 — CONSTRUCTION METHODS — Page 21

Construction Fastenings



Whenever you need fastenings for construction work, get in touch with Bethlehem. For the Bethlehem line of fastenings is so wide . . . so complete . . . that you can always count on finding the right types and sizes to meet your needs.

Bethlehem fastenings plants are modern, well-equipped. And Bethlehem engineers, thoroughly experienced in all phases of fastenings manufacture and applications, are constantly on call to consult with you on your fastenings problems.

Bethlehem Steel Company, Bethlehem, Pa.

On the Pacific Coast Bethlehem products are sold by
BETHLEHEM PACIFIC COAST STEEL CORPORATION



Bethlehem supplies every type of Fastening

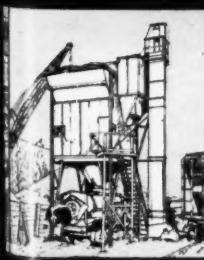
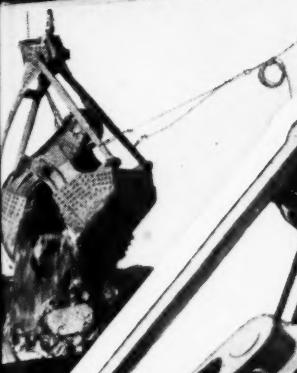
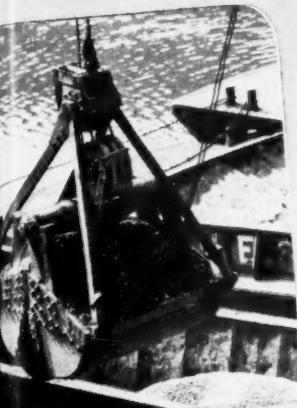
You always get
BLUE RIBBON PERFORMANCE
WITH BLAW-KNOX
BUCKETS

Good bucket performance means less time out for repairs and maintenance — constant pay loads on all kinds of digging and rehandling work — full utilization of crane capacities.

Catalog No. 1757 will show you how to select the exact bucket for your job. Send for it.

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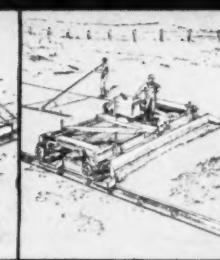
TRUCK MIXER
LOADING PLANTS



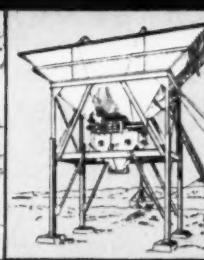
STEEL STREET
FORMS



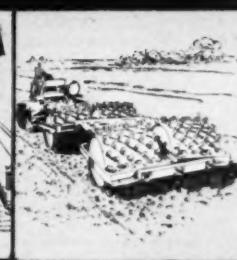
PAVING SPREADERS FOR
ROADS AND AIRPORTS



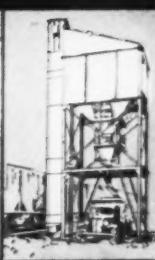
FINISHING MACHINES FOR
ROADS AND AIRPORTS



AGGREGATE
BATCHING PLANTS



SHEEPSFOOT TAMPING
ROLLERS



BULK CEMENT
PLANTS

Diesel Engine



Air ports clogged after operation on uncompounded oil.

RPM DELO Oil Prevents Air Port Deposits

RPM DELO Oil keeps air ports clean three ways:

1. By reducing ring wear (RPM DELO Oil is compounded to cling to scorching wear points which most oils leave bare).
2. By preventing ring-sticking (a detergent in RPM DELO Oil eliminates the deposits which stick rings).
3. By preventing oxidation of the oil (RPM DELO Oil's anti-oxidant compound controls the gummy substances which act as a binder for deposits).

To match the fine performance of RPM DELO OIL, use these equally efficient companion products from the same famous "RPM" line—RPM HEAVY DUTY MOTOR OIL—RPM COMPOUNDED MOTOR OIL—RPM GEAR OILS AND LUBRICANTS—RPM GREASES. For additional information or name of your distributor, write any of the companies below:

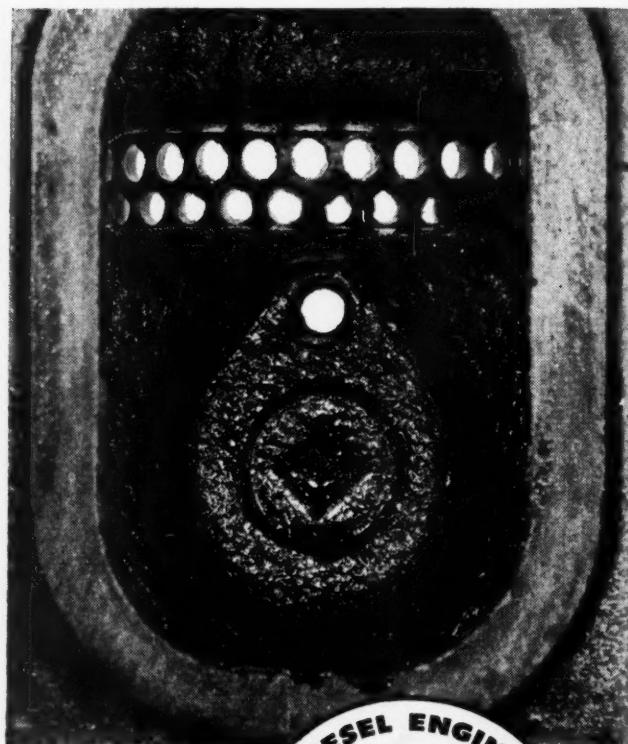
STANDARD OF CALIFORNIA • 225 Bush St., San Francisco 20, California
THE CALIFORNIA COMPANY • 17th and Stout Streets, Denver 1, Colorado
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA OIL COMPANY • 30 Rockefeller Plaza, New York 20

DANGER points

Clogged Ports Reduce Efficiency

To the operator of a two-cycle Diesel engine, the clogging of air ports can become a serious problem. Deposits on air ports are composed largely of fuel soot and oxidized products. These contaminants reach the lower cylinder when sluggish or stuck piston rings permit blow-by.

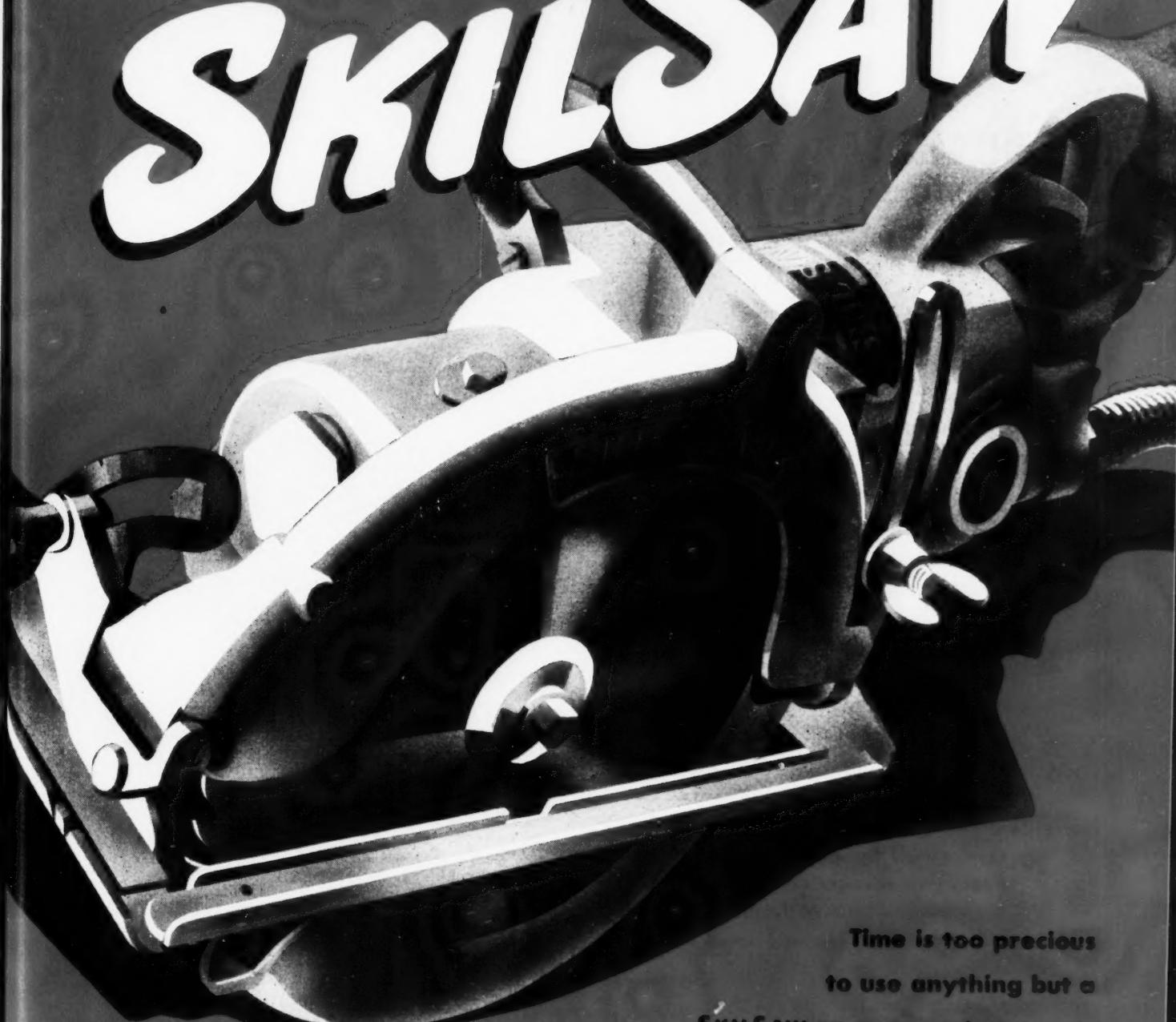
How RPM DELO Oil keeps air ports open.





Don't Just SAW It . . . SKILSAW IT!

GET A SKILSAW



**PORTABLE ELECTRIC
SKIL TOOLS**



MADE BY SKILSAW, INC.

Time is too precious
to use anything but a
SKILSAW on every cut on every
construction job. Ask your distributor
today about a demonstration.

SKILSAW, INC.
5033 Elston Ave., Chicago 30, Ill.
Factory Branches in Principal Cities

"ROCK BOTTOM"

Digging Costs

Assured
with
BUCKEYE
CONVERTIBLE
SHOVELS



Buckeye $\frac{1}{2}$ and $\frac{3}{4}$ yard shovels cut digging costs to "rock bottom" in any material by making digging, dumping, swinging, and traveling, easier and faster, with metered *vacuum power control*. Instant response to slight movement of short handles conveniently grouped on control panel assures fast action with full "feel". Simultaneous swing, crowd hoist and travel, plus vacuum control dipper trip speeds up every operation. Elimination of the fatigue caused by tugging at cumbersome levers means your operator can turn out as much work in the last two hours of the shift as in the first two.

Coupled with ease and speed of operation is

rugged construction to withstand the shocks and stresses of the toughest kind of rock work. Heavy duty, twin member, steel boom; strong tubular dipper stick; rugged chain crowd are only a few of the many superior construction features that make Buckeyes stand up under the most severe working conditions.

Get full details *now* on these speedy, convertible shovels that cut material handling costs to "rock bottom".

BUCKEYE TRACTION DITCHER CO.
FINDLAY, OHIO



"TOMORROW'S WAY IS YOURS TODAY"

Buckeye

CONVERTIBLE SHOVELS—BULLDOZERS—ROAD WIDENERS—TRENCHERS—MATERIAL SPREADERS—R-B FINEGRADERS

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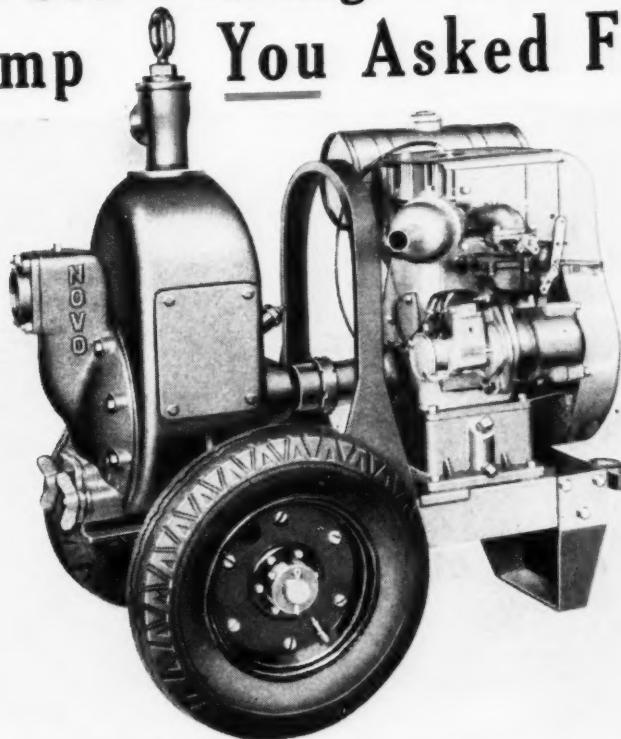
Charleston—CLYDE W. BECKNER, INC.

WISCONSIN Milwaukee—STONE MANUFACTURING CO.

NOVO NEWS

NOVEMBER, 1946

CONTRACTORS: Here's the Self-Priming Centrifugal Pump You Asked For!



The new Novo "Pronto-Prime" Self-Priming Centrifugal Pump was literally designed to *your* specifications. We asked hundreds of contractors exactly what features they wanted in their new pumps. The Novo "Pronto-Prime" pump is the direct result of this survey; it includes every important feature that *you*, from actual experience, have found necessary to efficient, trouble-free operation.

Super Speed Positive Priming—new improved design.

Long-lived "Stout-Hearted" rotating Neoprene seal—self-aligning, self-adjusting, oil lubricated.

Self-Cleaning—turbulence through oversized, streamlined

water passages prevents settling and clogging.

Independent Pump Unit—permits servicing pump without removing power unit.

Serviceability—all wearing parts quickly accessible.

Many Mechanical Advantages

—Two roller bearings. Universal base. Line-bored pump case. Adjustable wear plate. Replaceable cut-off. Wear resistant Novite alloy parts. Raised suction. Large drains.

Guaranteed to Meet AGC Standards. "Pronto-Prime" performance is second to none.

Your nearest Novo distributor will gladly furnish more details.

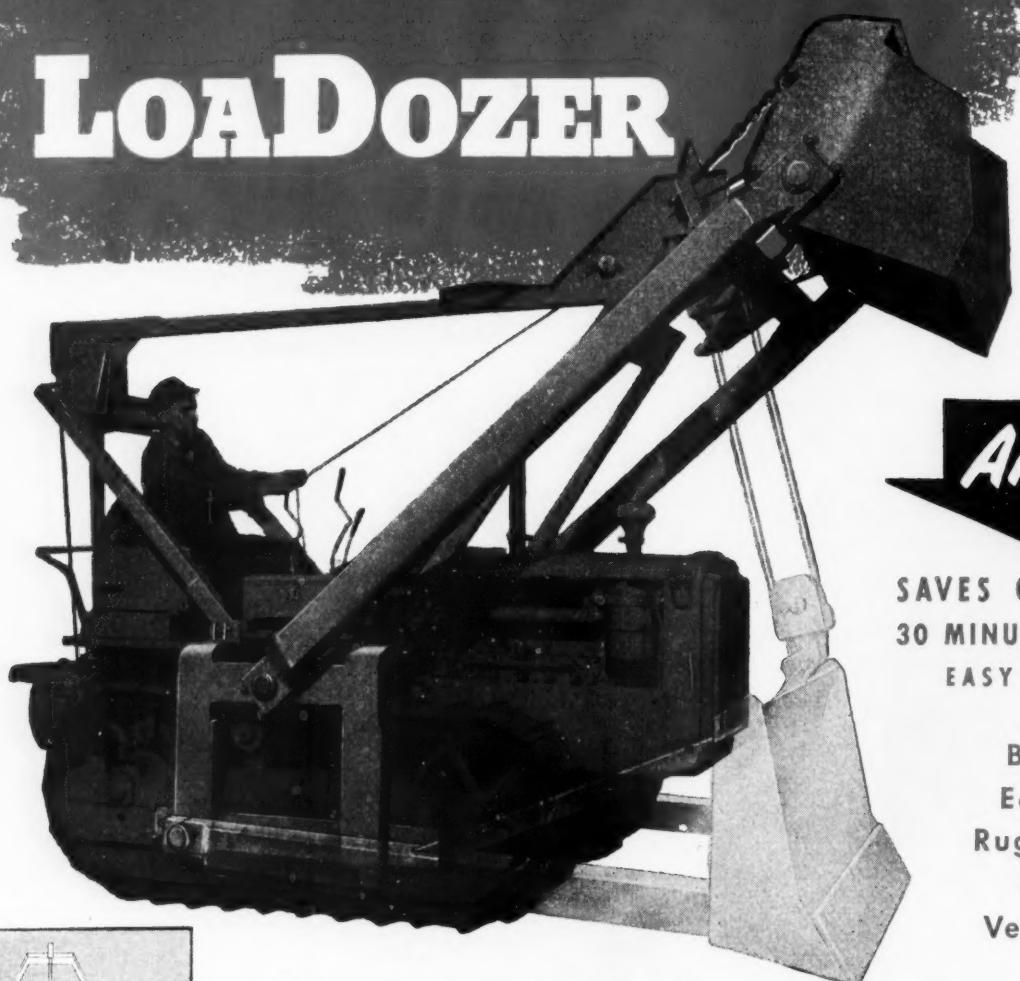


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ENGINE COMPANY
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CONTRACTOR'S EQUIPMENT
• GRAY IRON CASTINGS •
ENGINES

NOW—THE SOUTHWEST

LOADOZER

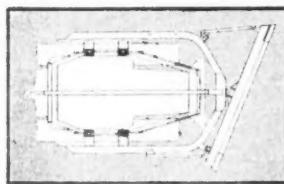
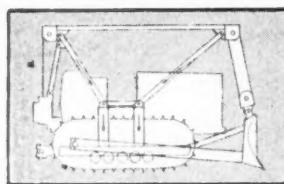
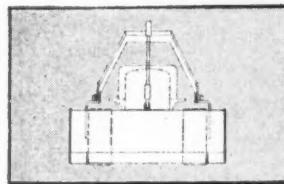


All this

SAVES ONE TRACTOR
30 MINUTE CHANGE-OVER
EASY OPERATION

Balance
Economy
Ruggedness
Speed
Versatility

ANOTHER EXAMPLE
OF *Southwest's* LEADERSHIP



"Over Center Track Mounted" design gives perfect balance

All these features are "built-in" qualities of the new SOUTHWEST "LOADOZER"—Extra values that mean greater efficiency and economy in Loader and Bulldozer operations. Remember—you SAVE ONE TRACTOR—it takes only 30 MINUTES TO CHANGE OVER this combination Loader-Bulldozer unit.

- Built for all four makes of track type tractors.
- See your equipment dealer about the complete line of SOUTHWEST CONSTRUCTION EQUIPMENT.
- For complete specifications on this Loader-Bulldozer combination unit—WRITE FOR BULLETIN CM-11.

CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

ALHAMBRA, CALIFORNIA



SCOOPS

BULLDOZERS

CRANES

WINCHES

DUMP TRUCKS

RIPPERS

TAMPERS

ROAD ROLLERS

Support the roof at your working faces with *Alcoa Aluminum Beams*



STRONG · LIGHT IN WEIGHT · LONG-LIVED

Miners will like working with Alcoa Aluminum Structural Shapes. The light weight of these beams makes hauling and handling easy. They can be set in place fast. Their high strength helps assure safe working conditions.

Alcoa Aluminum is highly resistant to the acid corrosion encountered in coal mines. This means that, on the job or in storage, these beams are long-lived.

Don't these coal mine beams suggest other applications of Alcoa Aluminum Structural Shapes to you? How about supports for those tunnels, excavations or similar construction work you're doing?

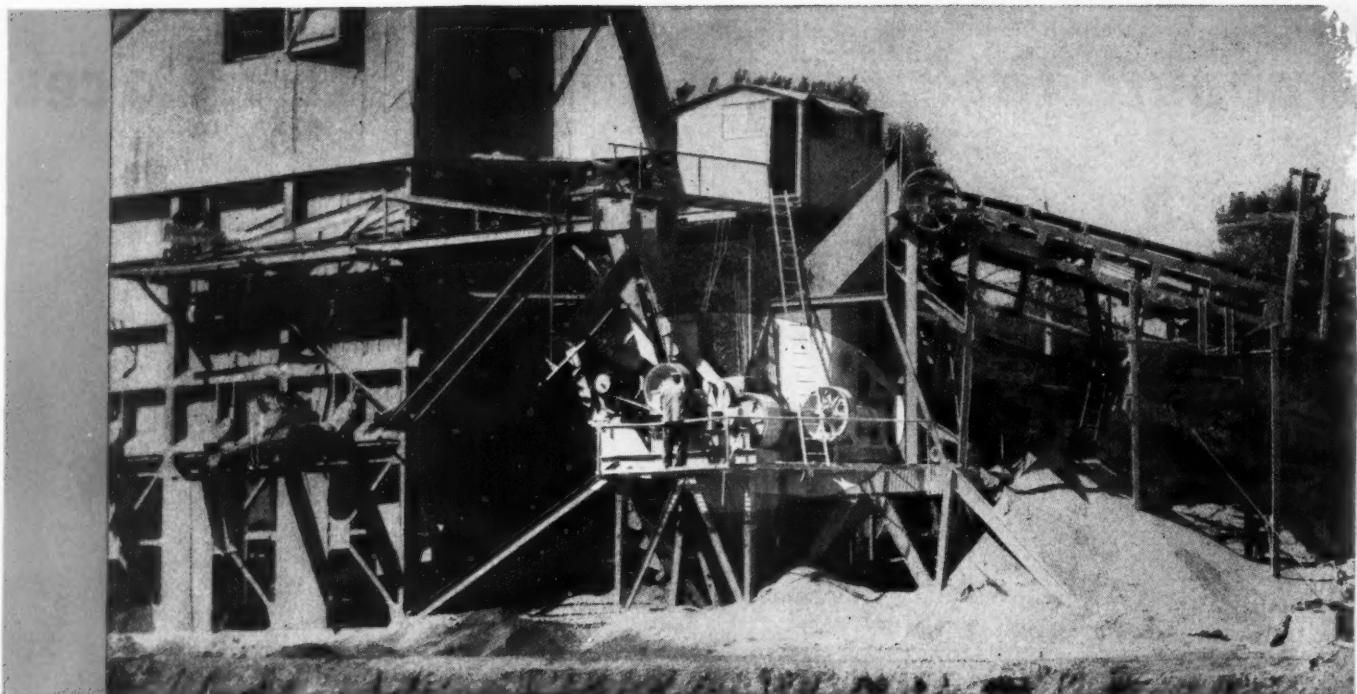
Our engineers will help you select shapes that meet your strength requirements. Call the nearby Alcoa office. Or write ALUMINUM COMPANY OF AMERICA, 1365 Gulf Building, Pittsburgh 19, Penna.



ALCOA FIRST IN ALUMINUM

IN EVERY COMMERCIAL FORM



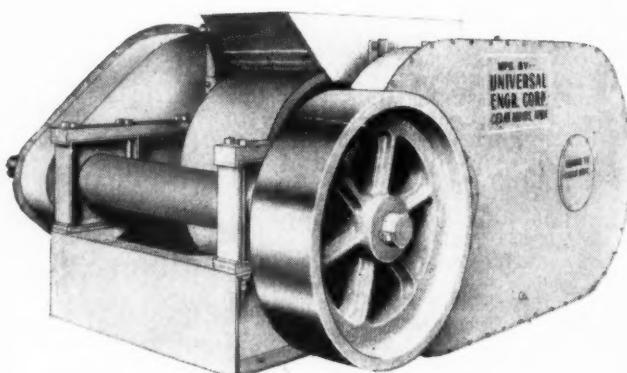


OVER A MILLION TONS AND STILL ROLLING ON ORIGINAL MAIN BEARINGS

8 years ago the River Products Company, Coralville, Iowa installed a Universal 40 x 24 roller bearing roll crusher for secondary crushing at their plant. Up to September 1946 this crusher had reduced 1,092,376 tons of material. 30,609 tons passed through the rolls in August of 1946 and production for the year will better 250,000 tons. That's a lot of production. What's more, this crusher still rolls on the original main bearings. Two Universal 1836 Jaw Crushers and a Universal No. 4 Pulverizer are included in the plant set-up.

Universal Star Gear Drive Roll Crushers for Profitable Secondary Crushing

Featuring star gear final drive, surplus load rated roller bearings, double safety against tramp material, simplicity of design, and greater capacity, Universal Star Gear Roll Crushers are built to take punishment and keep rolling out high production year after year. Universal design includes drive shaft operating in a tubular steel housing which reinforces the frame and permits bearings to be spaced closer to loads, practically eliminating heavy bending strain on drive shaft. Ask your Universal Dealer or write for Bulletin 6A-2.



Universal represents more than 40 years design and manufacture of crushing, screening and loading equipment. You can depend on Universal for highest capacity and trouble-free performance. Profit by checking your needs with your Universal dealer.

UNIVERSAL
ENGINEERING CORPORATION
327 Eighth Street N. W., Cedar Rapids, Iowa

ROCK, GRAVEL AND LIME CRUSHING PLANTS • CONVEYORS
SCREENING OR WASHING PLANTS • APRON FEEDERS

METAL PAINTED WITH
RED LEAD
GETS PLUS PROTECTION

Red Lead "Soaps" *help make Paint Film Tough...Flexible...Water-Resistant*

While maintenance engineers know, by long experience, that Red Lead helps *make metal last* . . . and widely accept it as the standard metal protective paint . . . it remained for modern science to show exactly *why* Red Lead so effectively inhibits rust.

One of the important reasons is Red Lead's ability to react with the vehicle, and produce unique lead "soaps."

These soaps grow to form a tough, impervious, intermeshing matrix within the paint film, as shown in the photomicrograph at right.

The soap formations increase Red Lead's protective power in several ways. For one thing, they *mechanically reinforce* and toughen the paint film.

At the same time they contribute all-important flexibility, allowing movement all along their soft, intertwining projections. This helps prevent the ruptures to which a hard unyielding film is subject.

Moreover, lead soaps slowly form primarily in the dry paint film as it ages. This is where the soap formations impart their greatest benefits. When a paint film weathers and ages, decomposition products of the vehicle are formed. Red Lead's ability to slowly combine with these decomposition products actually enhances the life of the paint film. Red Lead's slow rate of reaction means the film age-hardens at a slower rate. It thus retains a high degree of flexibility, a great factor in its lasting adhesion.

And again, the very structural formation of the soaps, with their dense, impermeable matrix of interwoven fibres, helps to restrict the passage of moisture through the paint film. Metal cannot rust without the presence of moisture.

Specify RED LEAD for ALL Metal Protective Paints

The value of Red Lead as a rust preventive is most fully realized in a paint where it is the only pigment used. However, its rust-resistant properties are so pronounced that it also improves any multiple pigment paint.

No matter what price you pay, you'll get a better paint for surface protection of metal if it contains Red Lead.

This photomicrograph shows the distinctive lead soap formations resulting from Red Lead's reaction with the vehicle. Note how the rod-like projections, radiating from central cores, spread out and intermesh. This makes a strong, flexible, interwoven structure, just as individual fibres in a piece of cloth are woven to make the cloth strong and durable. This type of soap formation is unique with lead paint films.

Here you see the standard apparatus used for measuring the water permeability of paint films.

With this equipment a measure of the amount of water that passes through a unit of film is obtained.

Experiments show that a standard linseed oil film allows three times as much water to pass through the film as when the same film is pigmented with Red Lead . . . illustrating once more the beneficial protective action of Red Lead and Red Lead "soaps."



Write for New Booklet—"Red Lead in Corrosion Resistant Paints" is an up-to-date, authoritative guide for those responsible for specifying and formulating paint for structural iron and steel. It describes in detail the scientific reasons why Red Lead gives superior protection. It also includes typical specification formulas. If you haven't received your copy, address nearest branch listed below.

The benefit of our extensive experience with metal protective paints for both underwater and atmospheric use is available through our technical staff.

NATIONAL LEAD COMPANY: New York 6; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6, (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30, (National Lead Co. of Pa.); Charleston 25, W. Va., (Evans Lead Division.)



Dutch Boy
Reg. U. S. Pat. Off.
Red Lead

NEW!



Lower Cost Hauling up to 20 Tons
"G.T.W."

DODGE "Job-Rated" HEAVY-DUTY TRUCKS

WITH NEW 282 AND 331 CUBIC INCH
POWER PLANTS—ENGINEERED TO SET
NEW POWER AND ECONOMY STANDARDS!

We sincerely believe you'll find these great *new* Dodge "Job-Rated" 'heavyweights' the most *profitable* trucks you can operate for loads up to 20 tons (G.T.W.).

They're powered by two brilliant *truck* engines—of 282 and 331 cubic inch displacement—in which horsepower-to-weight ratios reach a new high!

These engines develop 225 and 270 pound-feet of torque respectively—and maintain a high torque output over a wide range of engine revolutions.

Engine cylinder walls, of chrome nickel molybdenum alloy cast iron, are *so hard* that wear is almost non-existent. Every valve is made of silchrome, one of the hardest metals known. Exhaust valves are sodium-cooled, and valves and valve seat inserts are stellite-faced.

Everywhere, unnecessary surplus weight is eliminated by improved design and advanced metallurgy. New and strictly *heavy-duty* clutches, and a remarkably efficient five-speed transmission—coupled with rear axles of entirely new design—provide a highly efficient transmission of driving torque to the wheels.

Despite their husky construction and rugged, brute strength—these trucks handle with remarkable ease. It's a "cinch" to keep them rolling—even on steep grades with capacity loads.

If *your* transportation requirements fall within the 18,500 to 23,000-pound gross vehicle weight ranges (up to 40,000 pounds G.T.W.) . . . by all means get the *complete* story of these great new Dodge "Job-Rated" heavy-duty trucks. We believe you'll find them your long-awaited answer to *lower-cost hauling* in their capacity ranges!

ONLY DODGE BUILDS "Job-Rated" TRUCKS!

DODGE DIVISION, CHRYSLER CORPORATION



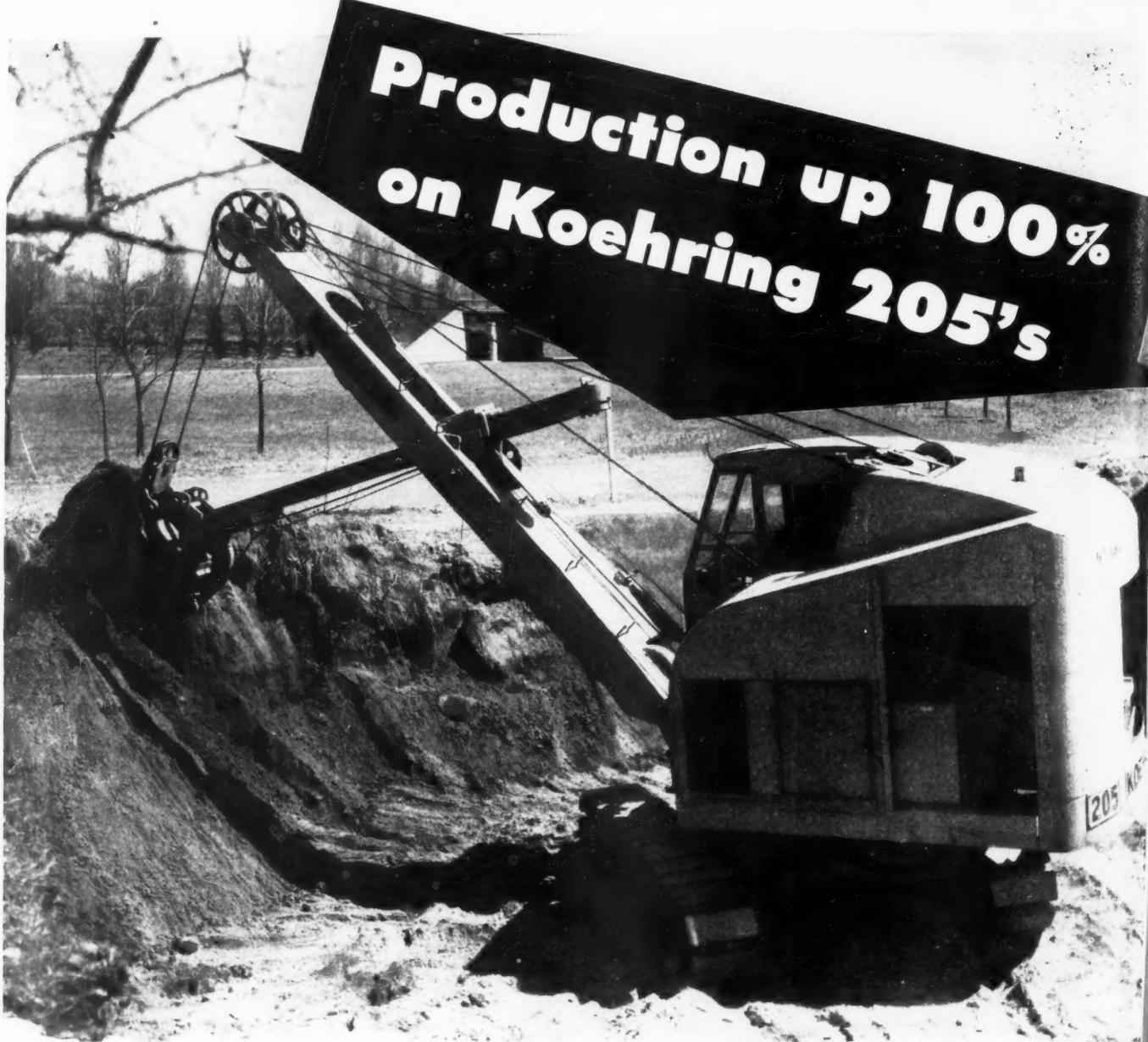
the **LPC** Dealer Nearest You for New **LPC** Equipment . . . Factory-Built Parts . . . Experienced Service

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Laplant-Choate
Job-Proved Equipment...

for Lowest Possible Cost
in Moving Earth



►►► NOW Start Your Long-Range Planning!

We're doing everything possible to whittle away the big backlog of orders for the new Koehring Half-Yard, the Koehring 205. Within the last few months, production has been stepped up 100%.

Like many another quality product, the Koehring 205 is still hard to get. But with

production doubled, you won't have to wait nearly as long. That's why it's time NOW to start your long-range planning for the Koehring 205. Shovel, crane, dragline, pull shovel . . . on crawlers or on rubber. Get your catalog and complete specifications today.



KOEHRING COMPANY, Milwaukee 10, Wis.

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HEAVY-DUTY CONSTRUCTION EQUIPMENT

"Concrete" Case FOR Canvas

Canvas covers permit work to go on right through the winter—BUT, ordinary canvas is also a fire hazard. A hot rivet, a slip of a welding torch or a salamander left too close to a windbreak, and months of work and thousands of dollars may be lost.

It's an entirely different story when FIRE CHIEF finished HOOPERWOOD Canvas is used because this canvas will not support combustion. The fire is out before it starts.

FIRE CHIEF has many other distinguishing qualities in addition to its fire resistance. It is also water,

weather, wear and mildew resistant. It is flexible, year 'round, and it keeps its "dry" finish. The unique FIRE CHIEF treatment is permanent. It will not bleach or wash out. FIRE CHIEF may be stored for indefinite periods and still retain *all* of its inherent qualities.

Insist on FIRE CHIEF for your windbreaks and tarpaulins and be sure of protection and economy.

WM. E. HOOPER & SONS CO.

New York PHILADELPHIA Chicago

Mills: WOODBERRY, BALTIMORE, MD.



"Fire-Chief" Finished

TRADEMARK

U. S. Patent No. 2,299,612 and other patents

HOOPERWOOD COTTON DUCK



SEE YOUR CHEVROLET DEALER
HE CAN SUPPLY YOU WITH CHEVROLET STANDARD TRUCKS
AND SPECIAL EQUIPMENT FOR ANY HAULING JOB

Chevrolet produces 99 models on 9 wheelbases—with a range of standard bodies and payload capacities that covers the needs of the great majority of users. To meet special hauling requirements, your Chevrolet dealer can supply you with special bodies and equipment that extend the range of usefulness and payload capacity of Chevrolet trucks and tractor-trucks up to the maximum permitted by law.



THERE'S A CHEVROLET TRUCK TO DO YOUR HAULING JOBS

99 MODELS ON 9 WHEELBASES

Newly added models, of greater payload capacity than in previous years, now make available Chevrolet's famous operating economy, low upkeep and low first-cost to a still greater range of users in the heavy hauling field. Chevrolet trucks formerly classed as heavy-duty models are now Chevrolet medium-duty models; the new models that now make up Chevrolet's heavy-duty class com-

prise five series, with five wheelbases (from 109 inches to 160 inches), and include both conventional and cab-over-engine types. All are equipped with vacuum-power brake boosters and with new wide-base-rim wheels.

Operators of trucks in extra-heavy hauling jobs will cut costs three ways by using these massive Chevrolets . . . for they cost less to buy, less to run, less to keep.

CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT 2, MICHIGAN

CHEVROLET TRUCKS



PICK-UPS



PANELS



STAKES



CAB-OVER-ENGINE



TRACTOR-TRUCKS AND CHASSIS FOR SPECIAL EQUIPMENT



99 MODELS • 9 WHEELBASES • THE RIGHT TRUCKS FOR ALL TRADES



About 35 miles out of Milo, Oregon, this Yarder, owned by Crown-Zellerbach Company (built by Berger Engineering Works), is powered by a 6-cyl., $5\frac{3}{4} \times 6\frac{1}{2}$ " Model ME-650 MURPHY DIESEL Engine, developing 165 HP continuously, and 200 HP for intermittent service.

Responsive POWER for the Lumber Industry

THE lumber industry . . . like many other industries . . . requires reliable, dependable power. MURPHY DIESEL engines assure a responsive flow of power whenever needed, even under the most extreme power-demands.

MURPHY DIESELS provide dependable, low-cost power for yarders, saw mills, planing mills, hoists and other heavy-duty logging and saw mill operations. This is rugged work . . . the kind of work that demands the power, rugged-

ness and dependability of MURPHY DIESELS.

The compactness and relatively light weight, along with economy in operation and maintenance, are further reasons why dependable MURPHY DIESELS should be specified for your logging and saw mill operations.

Specify MURPHY DIESELS and you will be sure of "More Power! More Profit!" Write for bulletin.

FIELD-PROVEN *Power..*

MURPHY DIESEL COMPANY

Engines from 90 to 215 H.P. Generator Sets from 60 to 115 K.W.



5339 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN

MORETRENCH WELLPOINTS FOR WET SEWERS



14' deep—11' of water in sand and clay—PROGRESS: 300' per day!

DO YOU WANT TO

- get more footage per day?
- eliminate sheeting?
- save time and money on your wet work?

Install a Moretrench Wellpoint System
It's the Proven Way To Change a Wet Job
Into a Dry One—a money-waster into a money-maker

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GIVES YOU A BETTER BREAK ON TIME



SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: Magnolia Petroleum Company, General Petroleum Corporation

Read how many ways this Complete Lubrication Service Speeds Up Work-Progress!

THE FIELD — Are equipment failures holding up other machines? . . . Causing too many work standstills?

We can help you cut "down-time" — boost output — with exactly the right oil or grease for every application. What's more, we can arrange *regular on-the-job deliveries anywhere!* Result: Fewer and shorter delays for fueling and lubrication.

YOUR OFFICE — Looking for a way to cut down "extra work"?

Now that you can get *all* your lubricants from a single reliable source, it's easy. No more bother with special orders, follow-ups, or bookkeeping!

IN MAINTENANCE — Having trouble finding plans to fit your *individual* needs? . . . Getting help with "problem" machines?

Our representative provides tested schedules based on *your* equipment, *your* set-up . . . helps your men adapt them to your special needs! He can also give practical help with "problem" equipment — call in qualified engineering aid, in critical cases.

IN JOB TRAINING — Too many machine hours lost due to inexperienced help?

Here, too, our representative can help you — by instructing "green" help on *where, when* and *how* to lubricate all your machines to keep them in top running order at all times.

Why Be Satisfied Merely With "Gas and Oil" When You Can Get Complete Service!

SOCONY-VACUUM
Contractors' Lubrication
SERVICE

CORRECT LUBRICATION
FOR EVERY PART
OF EVERY MACHINE
- Real Help with
Maintenance Problems!

Tune in The Mobilgas Program, Monday Evenings, 9:30 E. S. T.—NBC

Why **B-G** Portable Conveyors

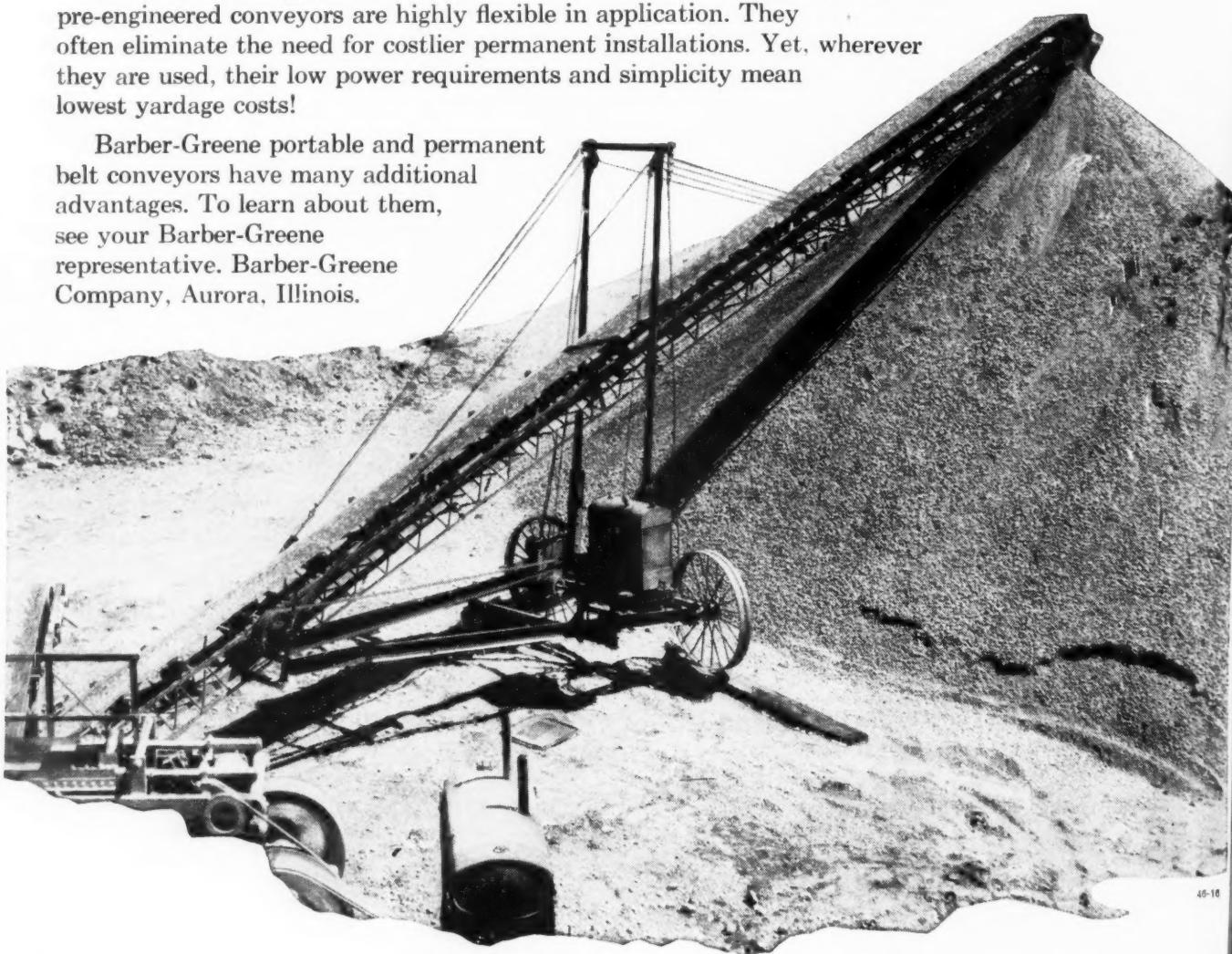
do so much—for so little

- B-G portable belt conveyors keep materials on the move at a constant flow that means high daily capacity wherever they're put to work.

They can move all over the job, the quarry, the supply yard—stock piling and loading everything from sand to cement, crushed rock to coal.

Shortened or lengthened by the addition or removal of sections, these B-G pre-engineered conveyors are highly flexible in application. They often eliminate the need for costlier permanent installations. Yet, wherever they are used, their low power requirements and simplicity mean lowest yardage costs!

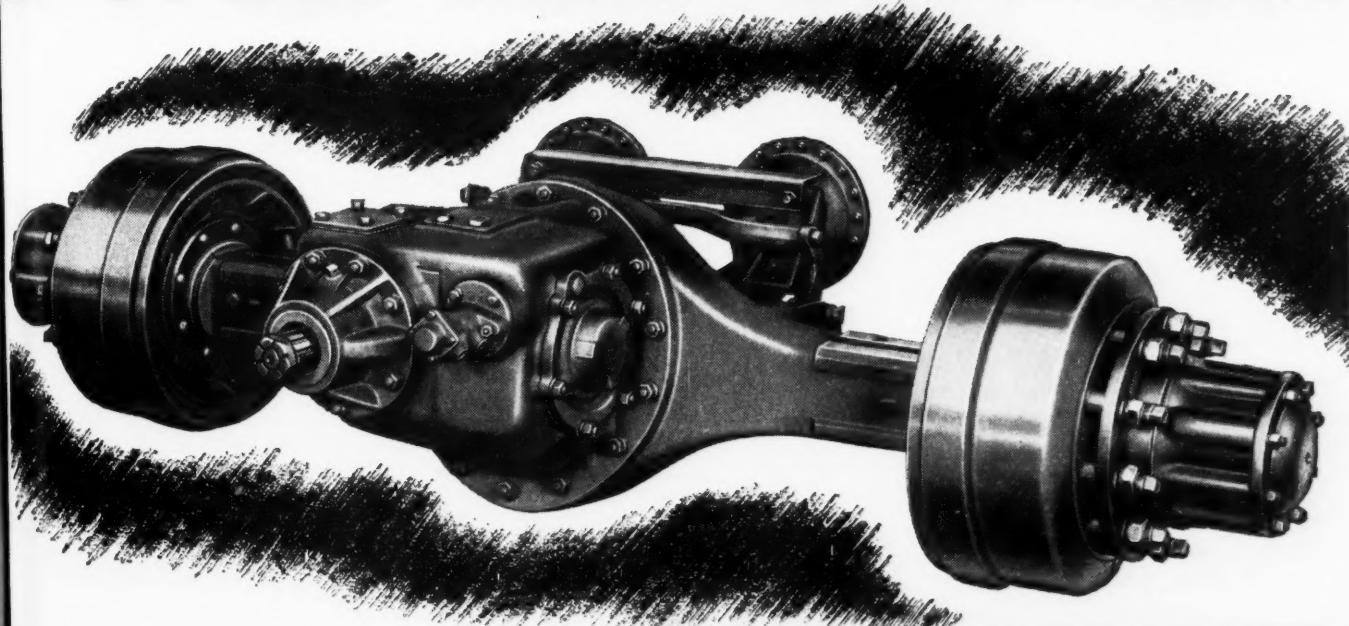
Barber-Greene portable and permanent belt conveyors have many additional advantages. To learn about them, see your Barber-Greene representative. Barber-Greene Company, Aurora, Illinois.



CONSTANT FLOW EQUIPMENT



NEW! S-300 P and U-300 P 2-SPEED HEAVY DUTY AXLES

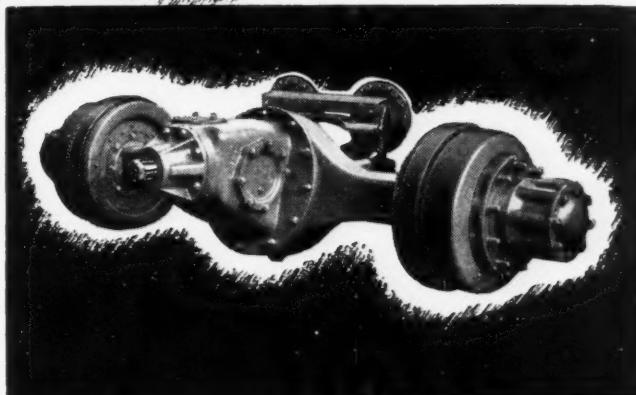


Companion Axles to the famous S-200 P and U-200 P →



2-Speed Hypoid
Helical Double Reduction
Final Drive used
in Timken S-300 P and
U-300 P Axles.

These new heavy duty axles by Timken are equipped with time-proved Timken Easy Power Shift—have a new 2-speed double reduction final drive unit that employs hypoid gearing for first reduction and helical gearing for the second step, thereby combining the full advantages of these two types of gearing. Both the S-300 P and the U-300 P series have the same rugged construction . . . combine all of Timken's time-tested features with many improvements . . . the two types of differential carrier assemblies (2-speed double reduction and double reduction single speed) are interchangeable in the same axle housing. The S-300 P is intended for heavy duty



Above, the famous Timken S-200 P and U-200 P Double Reduction Axles which are making such outstanding performance records on tough hauling jobs everywhere. The S-300 P and U-300 P are companion axles to the above.

haul on highways and city streets. Torque capacity is ample for modern high power engines. The U-300 P is for off-the-highway operations, using the same engine torque, but where still greater load carrying capacity is required.

TIMKEN AXLES

THE TIMKEN-DETROIT AXLE COMPANY, DETROIT 32, MICHIGAN
WISCONSIN AXLE DIVISION

• OSHKOSH, WISCONSIN



Big, Tough Jobs

WILLIAMS "SUPERECTOR"

● This rugged, reversible ratchet wrench is designed for speed and power. Quadruple pawls, rather than a single pawl, combine with a drop-forged handle to give it unbelievable strength. Twenty teeth on all sockets—both hex and square—permit complete rotation of nuts with only 18° handle swing. Made in five brawny sizes up to 53" long, accommodating sockets with openings from 1" to 4-5/8". Sold by Industrial Distributors everywhere. J. H. Williams & Co., Buffalo 7, N. Y.



AIR
PLUS

JAEGER COMPRESSOR

picked for the
tough air jobs



PURRS like a kitten, KICKS like a mule



"FLEET-FOOT"
Loaders



"SPEEDLINE"
Concrete Mixers



"SURE PRIME"
Contractors Pumps

JAEGER
Engineered EQUIPMENT

JAEGER-LAKWOOD SPREADERS, FINISHERS AND BITUMINOUS
PAVERS, FORMS, FORM TAMPERS—"DUAL-MIX" TRUCK MIXERS,
AGITATORS—JAEGER HOISTING ENGINES, TOWERS

Have you noticed the high number of "AIR PLUS" Compressors on the jobs where you meet rough going and there's constant heavy need for air?

Contractors know that Jaeger builds for that kind of service — with 75% to 100% bigger, cooler valves that operate indefinitely without carbon, with 20% to 30% slower, long-life piston speeds (800 f.p.m.), with full force feed lubrication, lifetime clutches, and interchangeable precision parts. They know that Jaeger standardizes on dependable Caterpillar and International diesels and Continental gasoline power. They know that engine and compressor will safely trail wherever a truck can travel, protected by the most rigid frame and roadable mounting ever put beneath a portable compressor.

THE JAEGER MACHINE COMPANY

Main Office and Factory: Columbus 16, Ohio

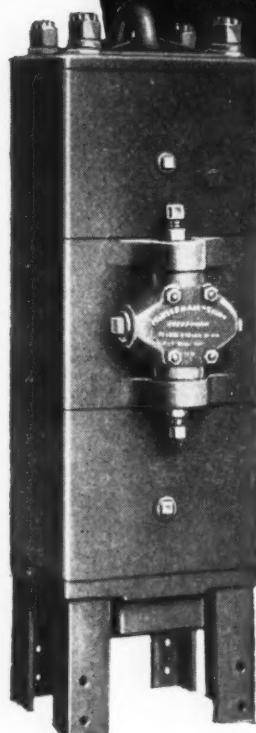
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Sold, Rented, Serviced in 120 Cities

No other manufacturer provides service comparable to Jaeger on air compressors, wherever your jobs may take you. Ask us for name of your local distributor and copy of Catalog JC-5, the up-to-date buyer's guide for compressors of 60 to 500 ft. size, trailer, truck or tractor mounted to meet your needs.

Another unusual Pile Driving job — Again a McKIERNAN-TERRY solution



SEND FOR THESE
FREE
BULLETINS

For complete information, specifications, photos, diagrams, ask for *Pile Hammer Bulletins 55 and 57*.

Suspended from ceiling, this McKiernan-Terry Pile Hammer successfully drove 12-in. steel cylinders in 7-ft. lengths through 48 feet of miscellaneous fill, clay and sand down to solid rock.

A midwestern plant was engaged in vital government work, when the building began to show serious signs of settling. To install essential underpinning — without interrupting plant operations — presented a real problem.

Working with very limited headroom, the contractors, Spencer, White & Prentis, Inc., New York, suspended a McKiernan-Terry Pile Hammer by a heavy chain hoist and with it succeeded in driving 12-in. Tuba steel cylinders through existing spread footings under the building. Column loads were transferred to the cylinders through structural steel beams and wedges, after cylinders had been excavated and filled with concrete.

The expanded facilities of McKiernan-Terry plants at Dover and Harrison, New Jersey assure prompt deliveries of double-acting hammers in 10 standard sizes; single-acting hammers in 5 sizes; and double-acting extractors in 2 sizes.

MK-1002

McKiernan-Terry

CORPORATION
Manufacturing Engineers

"My Vote Goes to The Truck I Drove In The Army"



Returning veterans, working on jobs where motor trucks are purchased or used, just naturally go for GMC. For wherever they served ... Africa or the Aleutians, Europe or the Pacific ... their number one source of truck transport was the GMC "six-by-six." And whatever their branch of the Army ... ground or air forces, combat or supply...GMC "Army Workhorse" power proved its ability on the toughest jobs.

Civilian GMCs benefit by the same manufacturing facilities, incorporate the same all-truck construction and feature engines of the same basic design as their military brothers ... nearly 600,000 strong. Offered in a wide range of models, chassis types and sizes, $\frac{1}{2}$ to 20 tons, new GMC trucks provide war-proved performance for all kinds of peacetime hauling.

Traffic accidents have increased at an alarming rate since the war. Careless driving, jaywalking and neglect of needed repairs are mainly responsible. Do your part to prevent accidents by obeying all traffic laws ... by driving safely and walking carefully ... by having your car or truck inspected regularly, repaired promptly and properly.



GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

Rhoten & Frysinger between race track job a WORK EVERY DAY... B



at race track

"Tournapulls can build a fine grade . . . or cut a fine grade", says Chas. W. Frysinger. Here are the results on race track job.



Switching 12 miles between race track and quarry to suit weather conditions, the 2 Tournapulls moved a total of 80,000 yards on the two jobs in 50 eight-hour days.

Each Tournapull moves 1079 yards per 8-hour day on 400 to 800' hauls

Rhoten & Frysinger Construction Co., of Columbus, Ohio, used 2 Tournapulls, grading 60,000 yards of Tournapull clay on 1/2 mile auto race track for Powell Speedway, Quarry north of Columbus. On 400 to 800' hauls in damp, heavy clay contractor's records show each Tournapull averaged 1079 yards per 8-hour work day . . . 2 Tournapulls moved 41,000 yards in 19 days.

When 23 days of rain delayed this job because fill would not take wet material, Rhoten & Frysinger switched their Tournapulls to their stripping job at Marble Cliff Quarries (see opposite page), maintained steady production . . . and earnings.

A third Tournapull was added later and track completed in less than 3 months, despite heavy rains. All 3 Tournapulls now work full time at the quarry.



LET

FOR LOWEST NET COST PER YARD

switch TOURNAPULLS and quarry stripping... BEAT BAD WEATHER



Stripping Marble Cliff Quarries, each TOURNAPULL delivers 616 yards per 8-hour day on 2000' haul

bus, After completing race track, Rhoten & Frysinger's s of Tournapulls made final 12-mile move to Marble Cliff way, Quarries. This 100% Tournapull job consists of strip- imp, going 250,000 to 300,000 yards per year. Stone lies pul under 10 to 30' of clay, gravel and boulders.

2 Here, each rubber-tired rig delivered 7 loads per hour on 2000' haul. Grades run from 4 to 7% ad- verse on 1400' of haul . . . spread down 8 to 10% . . . climb of 4 to 6% on 1200' of return. In a 17-day period, the three Tournapulls stripped 50,000 yards over hauls ranging from 500 to 2000'.

Stripping in this 50-year-old quarry has been handled by shovels and wagons, then shovels and trucks . . . com- how one-man operated Tournapulls ains strip, haul and spread, arry further reduce unit costs.

at quarry

Good job planning, excellent haul roads, preventive equipment maintenance added to Tournapulls' high production.



You, too, can get job and profit insurance by using big output capacity and versatility of Tournapulls. Their fast self-powered moves between jobs further reduce non-productive time losses. It will pay you to ask your LeTourneau Distributor to show you additional facts and figures on how Tournapulls can increase your profits.

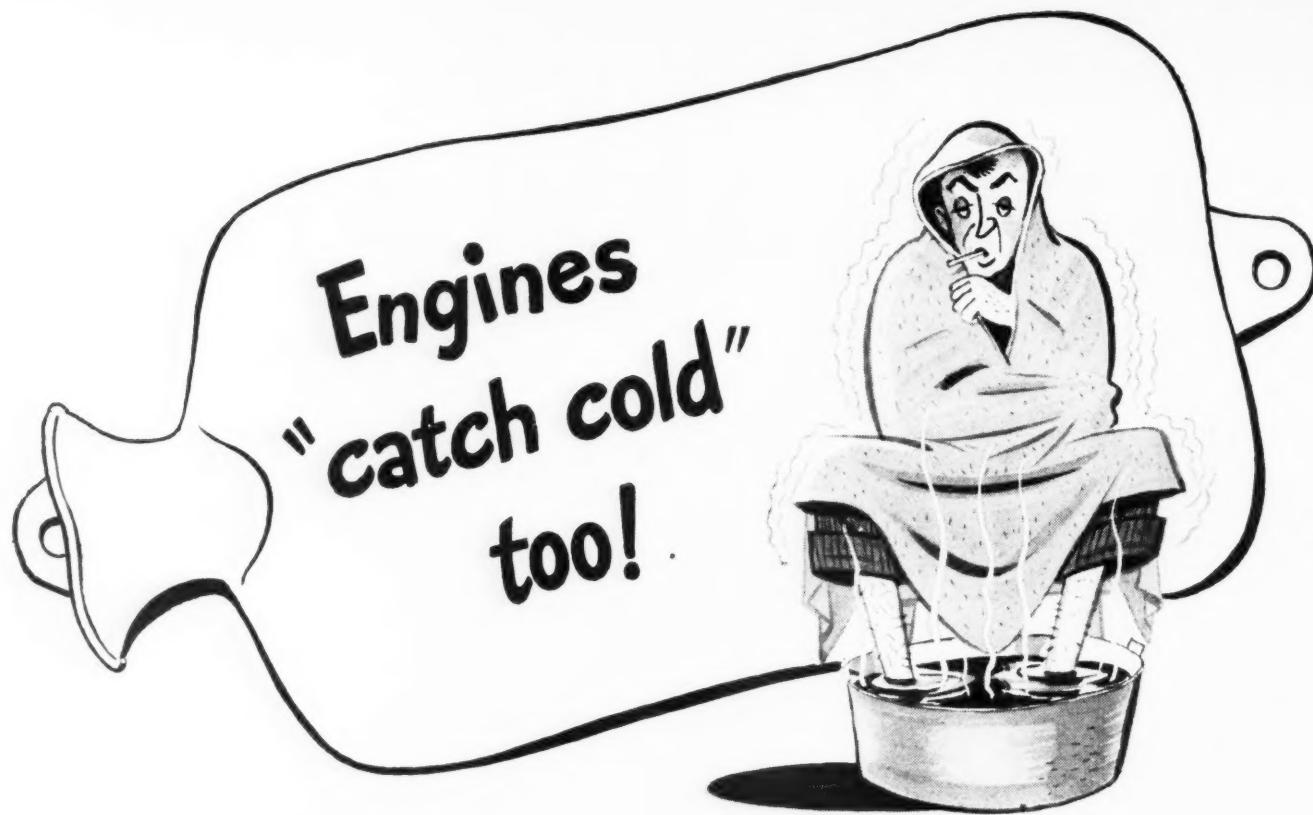


LETOURNEAU
PEORIA, ILLINOIS



TOURNAPULLS

Trade Mark Reg. U. S. Pat. Off. C-540



Stanolube HD helps prevent cold engine sludge

IS COLD WEATHER operation bringing you the usual flood of engine trouble caused by cold engine sludge, particularly on equipment that operates intermittently and does not get "warmed up"? There are two steps you can take to avoid this trouble.

First, switch to Stanolube HD. Fleet records over the past four years show that Stanolube HD is effective in reducing cold engine sludge. There are two reasons. Stanolube HD virtually eliminates oil oxidation and its detergency helps remove sludge deposits and other harmful contaminants.

Second, when a sludge problem is particularly troublesome, call in a Standard Oil Automotive Engineer who can help you by making operating suggestions such as those listed here.

Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois, for the Engineer nearest you.

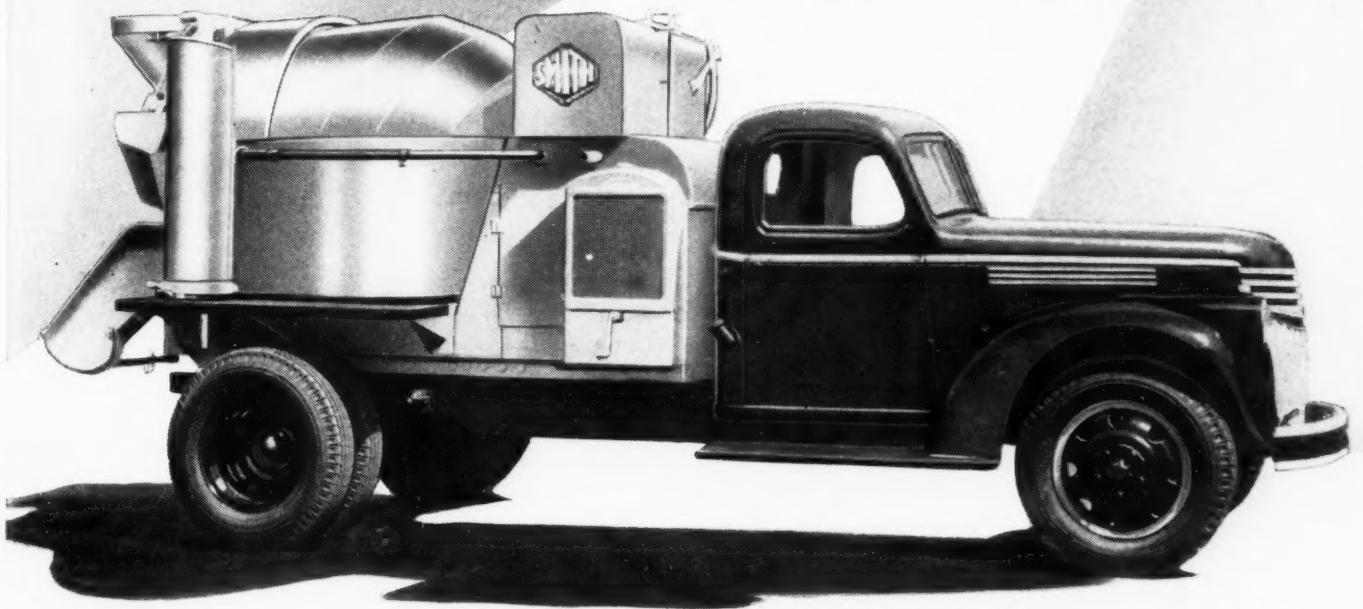
Check these points to check cold engine sludge:

1. **Adjust or install thermostats** to maintain proper coolant temperature.
2. **Be sure winter fronts** are available for extremely cold weather.
3. **When necessary, use insulation** for valve covers and oil pans (particularly for stop-and-go service).
4. **Insure proper crankcase ventilation**—road tubes and crankcase breather filters must be clean.
5. **Make certain oil filters are functioning**—that connecting lines are clean.

STANDARD OIL COMPANY (INDIANA)

STANDARD SERVICE

*The SPOTLIGHT is
still Focused on*
SMITH-MOBILE!



**Improved, Streamlined Models
Now About Ready for Delivery**

12 years ago, SMITH-MOBILE made its initial appearance as the industry's first HIGH DISCHARGE truck mixer and agitator. It displaced the old style, horizontal drum "hatch-loaders" and rendered them thoroughly obsolete.

Now — SMITH-MOBILE again increases its acknowledged leadership in the field with a record of achievement unparalleled in the industry. To its many time-tested features: HIGH DISCHARGE . . . CONTROLLED DISCHARGE . . . VISIBLE MIXING . . . FEED CHUTE CHARGING . . . etc., are now added many other important refinements that make for even greater speed, efficiency and safety in operation.

Built and guaranteed by SMITH . . . mixer manufacturers for more than forty-five years . . . SMITH-MOBILE is a thoroughly tried and proven product. At present, of course, the demand for this ultra-modern truck mixer greatly exceeds the supply. Deliveries, however, are being pushed ahead as rapidly as conditions permit. In the meantime, we suggest you write for new SMITH-MOBILE bulletin.

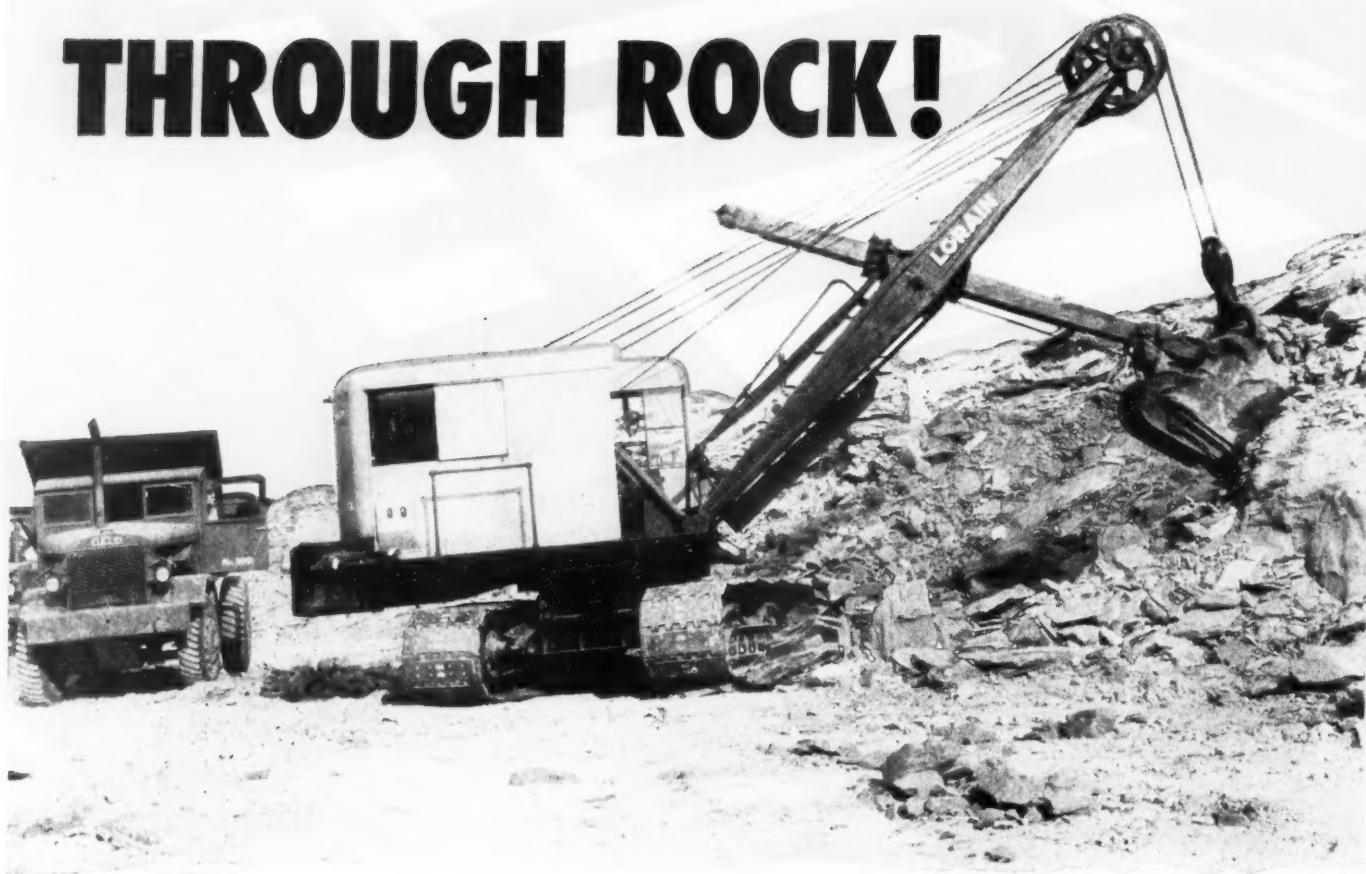
Check these PLUS VALUES:

Dual water system, heated for winter operation . . . Improved, easy-to-operate chute lifter . . . Rubber mounting for bearings and gear case . . . Quickly accessible clutches . . . Improved sealing door . . . Accurate siphon-type tank . . . complete, streamlined enclosure for greater safety.



THE Original HIGH DISCHARGE TRUCK MIXER AND AGITATOR

RAILROADIN' THROUGH ROCK!



THREE'S 1,500,000 yards of excavation on this railroad relocation contract and a good portion of it consists of tough limestone rock. Spearheading the job is this 2-*yd.* Lorain-820 shovel.

Why is the 2-*yd.* Lorain-820 a regular on the rock jobs? First, and foremost, because of its Hydraulic Clutch which (1) absorbs "rock shock" before its destructive action can reach mechanism and cables and (2) improves "hanging on" performance to the point where you can't stall the engine.

Add to this Thew pioneered feature the extra power of double Center Drive design on the turntable, the strength of an all-welded shovel boom and dipper stick and the stability and mobility of a big 2-speed chain drive crawler 15 ft., 6 in. long. Result? A fighting combination that has won every round against rock on many of the nation's toughest jobs.

Your local Thew-Lorain distributor can supply you complete information on this 2-*yd.* shovel. Write or call him today!

Reg. Trade Mark
thew. Lorain

CRANES • SHOVELS • DRAGLINES • MOTO-CRANES

THE
THEW SHOVEL CO.
Lorain, Ohio



LIKE A RHINO

Truck Tires really Tough

**Armstrong's great new Rhino-Flex
Truck Tires — with rayon cord — give
you much greater strength, more
flexibility, cooler running.**

BACK your trucking business with the toughest, safest, coolest truck tires ever made by Armstrong — leading manufacturers since 1912.

The carcass is the most important single factor in a tire. That's why Armstrong's amazing Rhino-Flex Truck Tires take the beating they do — mile after mile

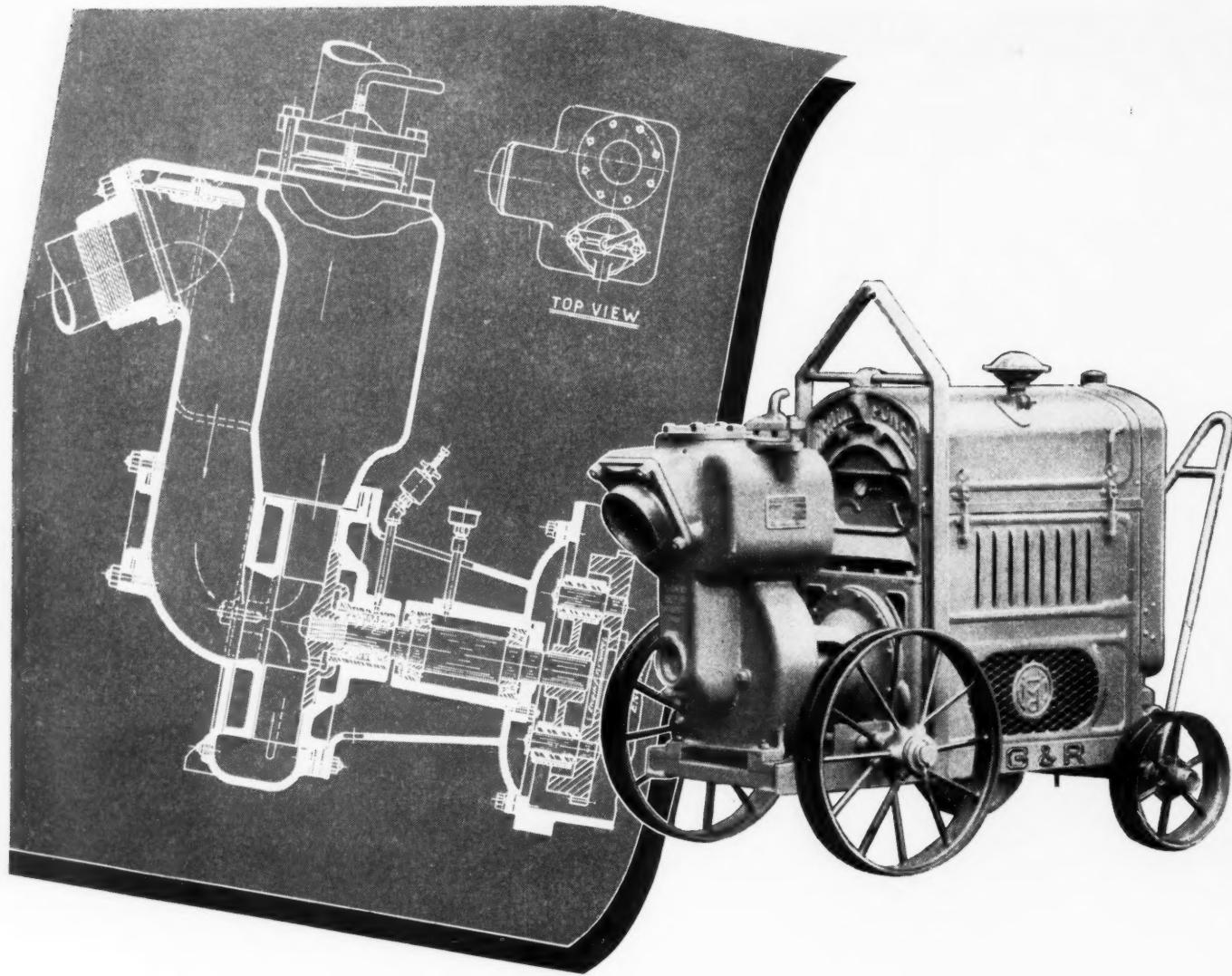
— and still come back strong for more heavy duty.

Armstrong worked overtime during the war to develop the toughest tire carcass possible for combat vehicles. Rhino-Flex carcass was Armstrong's answer. And according to combat reports, it produced the toughest Armstrong Tire ever built.

Now you can get this great new super truck tire, with tougher, tighter twisted *rayon cord*, that assures you greater strength, more flexibility, cooler running. Armstrong Rhino-Flex Truck Tires are available coast to coast. See them. Compare them with any other truck tire ever made at any price. You'll choose Armstrong every time!

Manufacturers of Quality Tires and Tubes since 1912 • General Offices and Plant—460 Elm Street, West Haven 16, Conn.

ARMSTRONG *Rhino-Flex* TIRES



MR. CONTRACTOR:- *The real story of pump value is found by examining the inside.*

It's the simplicity and good design that accounts for the outstanding performance of Gorman-Rupp self-priming, centrifugal pumps. They are the most efficient and trouble-free pumps you can buy and the reasons are built into the pumps:

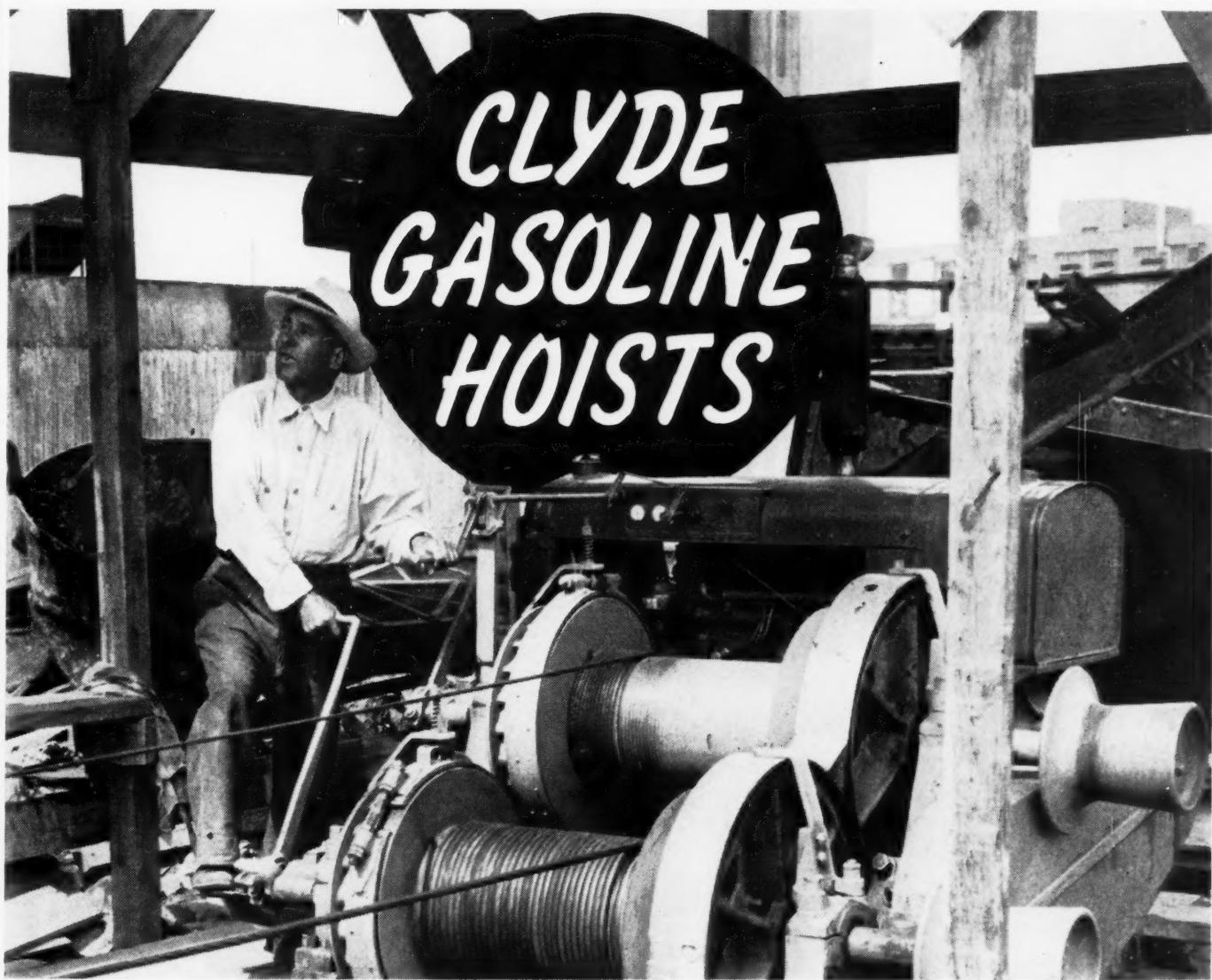
Streamlined inside where streamlining counts. Smooth surfaces, no traps -- these pumps will handle any muck or solids that will pass the intake strainer. No bypasses, no pipes, no valves -- after initial prime there is nothing to do in priming but start the motor and you start the water. This greater priming simplicity pays off in more work for less power and fuel.

Impeller operates at motor speed without reduction gears -- eliminating another source of wear, trouble and maintenance. The impeller, rotating on high grade roller bearings, is the only moving part.

Every wearing part is easily replaceable. What little maintenance is necessary can be done by an unskilled man with common tools.

These are a few of the reasons why Gorman-Rupp centrifugal pumps will outperform and outlive any comparable equipment. We will be glad to place one in your hands and let you be the judge. Write your distributor for information.

THE GORMAN-RUPP COMPANY
 308 BOWMAN STREET • MANSFIELD, OHIO



Clyde Gasoline Hoists on your job assure better building schedules . . . materials and supplies will be handled rapidly and economically with less danger of costly shut-downs.

Clyde Hoists are quality hoists all the way through . . . they are scientifically engineered for easy operation and efficient service. The best quality materials obtainable; careful and accurate workmanship combine to make them safe, dependable and long-lasting.

The illustration above shows the construction of the Famous-Barr Relay Station in St. Louis, Mo. Erection work is being done by the Westlake Construction Company. Mr. Les White is general superintendent for this company.

The concrete work, building forms and pouring concrete, was sub-contracted by H. A. Dailey, Inc. with Mr. Earl Hodson as job superintendent. H. A. Dailey, Inc. purchased two Clyde Gasoline Hoists to help speed-up building schedules.

On your next job, check the advantages of Clyde Equipment. Write for special bulletins on any Clyde item.

HOISTS . . . DERRICKS . . . WHIRLEYS . . . CAR PULLERS . . . HAND POWERS
BUILDERS TOWERS . . . DECK MACHINERY . . . TANDEM ROLLERS . . . LOGGING EQUIP.

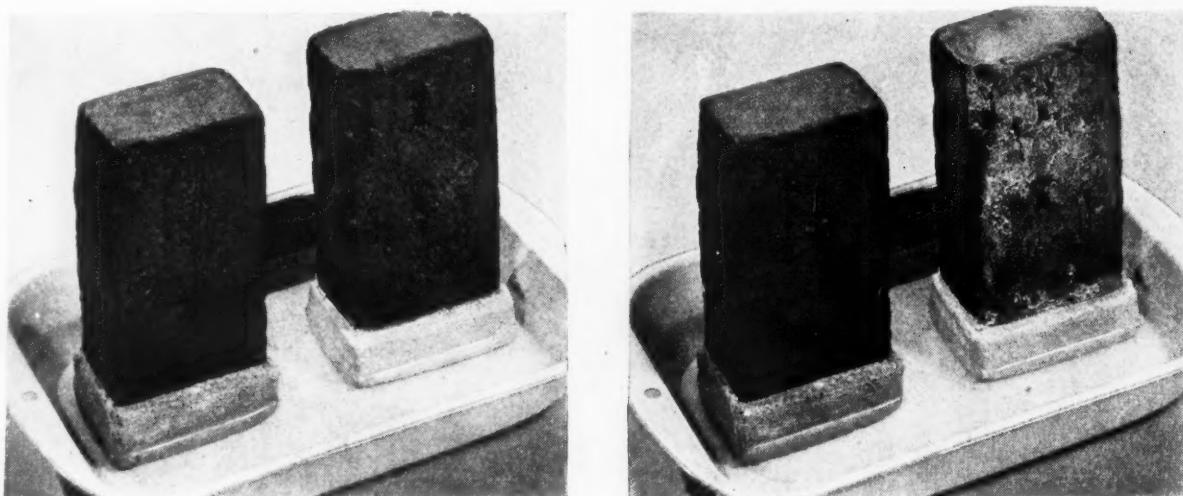
Manufactured by



CLYDE IRON WORKS, Inc.
Duluth 1, Minnesota

BRIXMENT MORTAR

Helps Prevent Efflorescence



To test two mortars for resistance to efflorescence, "cap" two brick heavily with the mortars—let harden, and

keep both brick for a few weeks in a shallow pan of water, as shown. Try this with Brixment mortar!

HERE'S WHAT CAUSES EFFLORESCENCE—AND WHY BRIXMENT MORTAR HELPS CONTROL IT

Efflorescence is an outcropping of minute white crystals on brickwork. When these crystals occur on colored mortar joints, the condition is sometimes mistaken for fading.

Efflorescence is caused by the presence of soluble salts in masonry materials. When reached by water, these salts dissolve, and are drawn by evaporation to the surface of the wall.

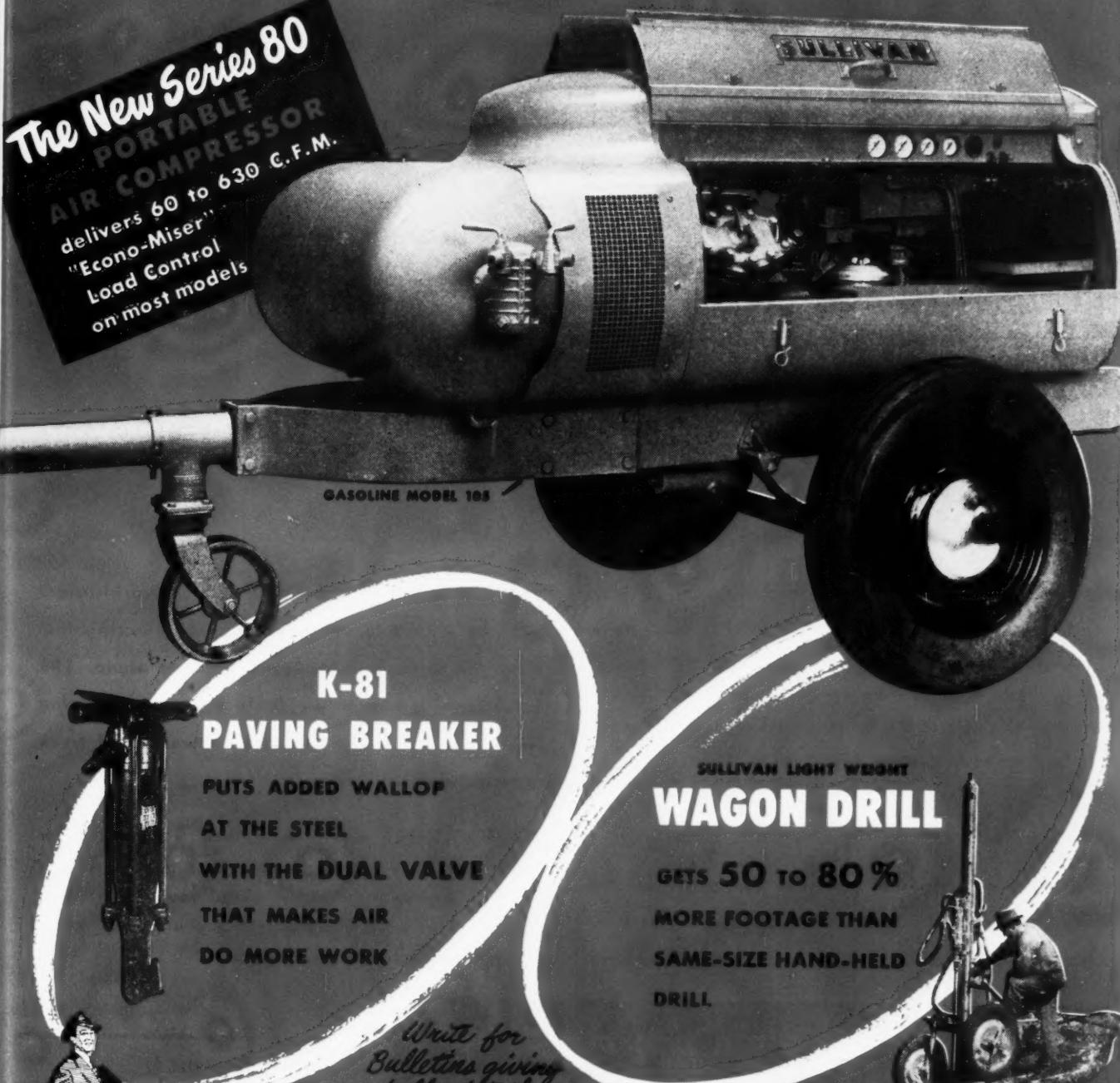
Brixment itself *does not cause efflorescence* because it is practically free from soluble salts. Even when such salts are present in the sand or brick, the waterproofing in Brixment usually *prevents them from coming to the surface*.

Bricklayers who have used Brixment mortar for years say they have far less efflorescence with Brixment than with any other mortar.

LOUISVILLE CEMENT CO., Incorporated, LOUISVILLE 2, KENTUCKY

CEMENT MANUFACTURERS SINCE 1830

Cash in on The Extra Air Power of **SULLIVAN** **COMPRESSORS** and **AIR TOOLS**



SULLIVAN DIVISION
JOY MANUFACTURING CO.

GENERAL OFFICES: HENRY W. OLIVER BUILDING • PITTSBURGH, PA. • W&D C680

**"We couldn't do the job
without Hydrotarders"**

—says Bill Hess, pioneer
California truck logger.



In his fleet of logging trucks, Mr. Hess has six new Peterbilts equipped with HYDROTARDERS. Each truck has a Fabco 99 Trailer, and is powered with a 200 H.P. diesel engine. They are hauling loads of 5000' Humboldt Scale to the railroad making ten trips daily over the five-mile steep grade route.

Here is Mr. Hess' full statement about Hydrotarders:

"I am most pleased with the operation of the Hydrotarder with which each new truck is equipped. I couldn't begin to do the job without

them. I figure that the cost of the Hydrotarders will be repaid in one season by eliminating lost time, by savings in brakes and drums alone. The additional savings on fuel, tires, and engine wear amount to a substantial lowering of truck operating cost."

HYDROTARDERS are proving their worth wherever heavy loads are hauled over steep grades. If you have a braking problem, let us tell you how HYDROTARDER can solve it while saving you money. Write your Hydrotarder distributor today.

Parkersburg HYDROTARDER

THE PARKERSBURG RIG & REEL COMPANY
PARKERSBURG, W. VA.

Manufacturers since 1931 of the famed Hydromatic Brake—the load retarder which makes possible the drilling of deep oil wells safely and economically. Its counterpart, the Hydrotarder, enables motor transportation to operate with greater safety, economy, and speed than was ever heretofore believed possible.

Distributed by

HETZEL BROTHERS

Engineers and Manufacturers

1972 Los Angeles Street, Los Angeles 11, California

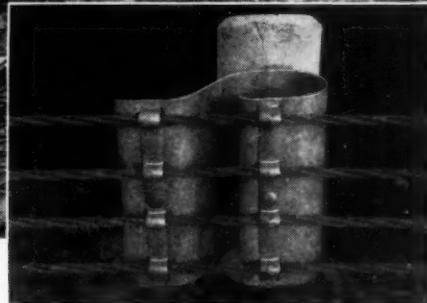
THE WINTER-WEISS COMPANY

22nd and Blake Sts., Denver 2, Colorado

The Pointer-Willamette Company

238 N. E. Oregon St., Portland 14, Oregon

ALL the STEEL FOR A HIGHWAY JOB FROM ONE SOURCE



If you have a contract for a highway job, you'll find it convenient and economical to have Bethlehem supply all the steel needed to complete the project.

Bethlehem's steel service means that you get from one source all the steel items required to build any highway or highway bridge. Your order is handled as a unit, with individual items scheduled to arrive at the project when and as you need them. You save in several ways—in reduced bookkeeping, in fewer follow-ups, in avoidance of needless delays—when you use Bethlehem's steel service.

Leading Bethlehem Highway Products

ROAD JOINTS	REINFORCING BARS	BAR MATS	GUARD RAIL
GUARD RAIL POSTS AND BRACKETS		WIRE ROPE AND STRAND	
HOLLOW DRILL STEEL	FABRICATED STEEL CONSTRUCTION		SHEET AND H-PILING
TIE-RODS	SPIKES	BOLTS AND NUTS	

BETHLEHEM CABLE GUARD RAIL

with bumper-type bracket makes a neat-looking, effective safety device for use on modern highways. Furnished to comply with all state specifications. Can be used with posts made of steel, wood, or concrete.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation



STEEL FOR HIGHWAYS

IA *Presents*

**More Power
Greater Hang-on
Better Operating Economy**

More Power! The horsepower of two models of International Diesel Power Units has been stepped up by 11% and 25% respectively — without increasing their size or weight — as the result of advanced engineering in the fuel combustion system. These are the 4-cylinder, 76-hp. UD-14A and 6-cylinder 125-hp. UD-18A Power Units. Power ratings are for *working* horsepower of the complete unit with fan, radiator and power take-off.

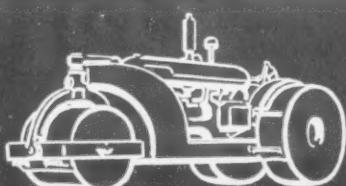
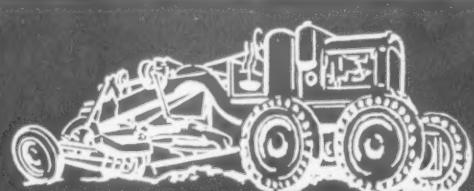
Greater Hang-on! When pulled down by overload, increased torque gives these Diesels greater "lug-ability." And they are built to take overloads in stride!

Better Operating Economy! Even with horsepower stepped up, these Diesels run cool under heavy loads and operate at new low cost per horsepower. A low rate of fuel consumption proves their efficiency.

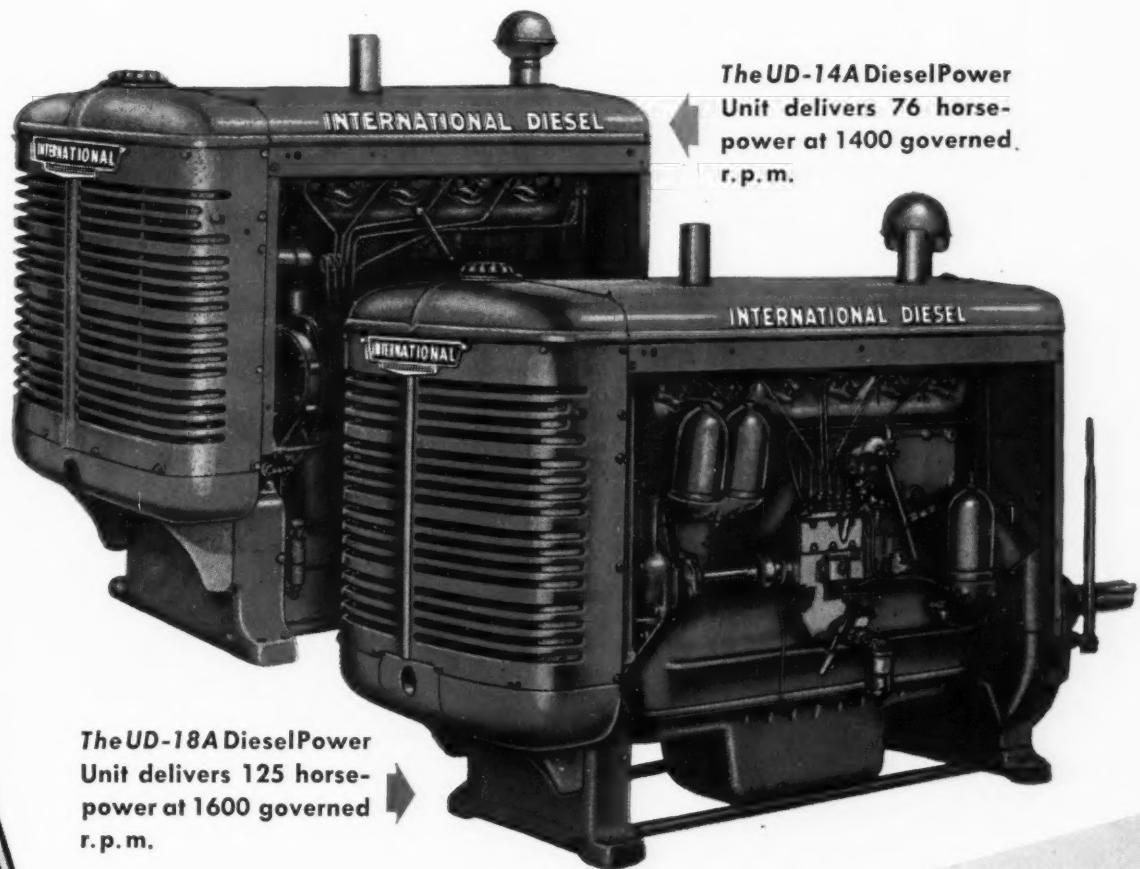
Available Soon! Look for these newest International Diesels in the powered equipment soon available through your International Industrial Power Distributor. And ask him for the facts and figures on these models. He has them now.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue • Chicago 1, Illinois



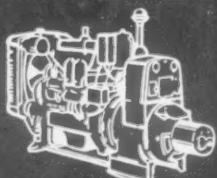
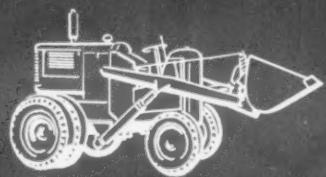
Another Advance in **INTERNATIONAL DIESEL POWER**



The UD-14A Diesel Power
Unit delivers 76 horse-
power at 1400 governed
r.p.m.

The UD-18A Diesel Power
Unit delivers 125 horse-
power at 1600 governed
r.p.m.

INTERNATIONAL Industrial Power





Behind the symbol "Butler Engineered Design" stands an enviable background of nearly a quarter of a century,—not only of engineering and manufacturing experience, but of pioneering in many of the major equipment developments for

the concrete construction industry . . . Twenty years ago, Butler pioneered

and has since led in the design of Ready Mixed Concrete Plants,—just as, more recently, Butler pioneered the construction of the modern Concrete Block Plant...The Butler Carscoop is a notable example of Butler pioneering and development in modern materials handling. Go to the pioneer for ingenuity and the engineering knowledge that only wide experience can bring.

Background of a Symbol

B U T L E R B I N C O M P A N Y

W A U K E S H A • W I S C O N S I N

One Link-Belt Speeder DOES MANY DIFFERENT JOBS!



Quick Convertibility MAKES LINK-BELT SPEEDER THE MOST USEFUL MACHINE ON THE JOB!

Many a job begins and ends in the cab of a LINK-BELT SPEEDER, first fitted with shovel for excavating, or with dragline for clearing the site, then with boom and hook-block for placing concrete and erecting steel. Underground pipe lines are laid with the aid of the trench-hoe, and finally the grading and clean-up work finished off with the dragline again!

For Prompt, Efficient, Convenient Sales and Service:
There is a Link-Belt Speeder Distributor Located Near You

Owners of Link-Belt Speeder machines enjoy year-round utility on many types of jobs, from the same rugged, powerful, easy-to-operate unit.

10,170
LINK-BELT SPEEDER
Builders of the Most Complete Line of
SHOVELS-CRANES-DRAGLINES
LINK-BELT SPEEDER CORPORATION, 301 W. PERSHING ROAD, CHICAGO-9, ILL.
(A DIVISION OF LINK-BELT COMPANY)

FOR 5 IMPORTANT REASONS

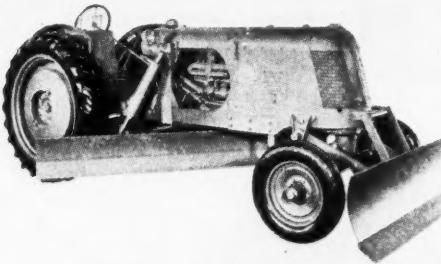
IT PAYS TO
PUT ALL OF YOUR
ROAD MACHINERY
PURCHASES IN "ONE
Basket"

- Huber has the EXPERIENCE of many years standing, so essential in building dependable road machinery.
- Huber has the KNOWLEDGE important to cope intelligently with road building and maintenance problems and to prescribe for an economical solution.
- Huber offers a COMPLETE LINE of 3-wheel Road Rollers and Tandem Rollers and a Maintainer that is eight machines in one.
- Huber's manufacturing FACILITIES are "geared" to meet maximum demand, once material shortages are licked.
- Huber's splendid distributor organization, strategically spotted throughout the country, joins the company in preserving its policy of UNDIVIDED RESPONSIBILITY.

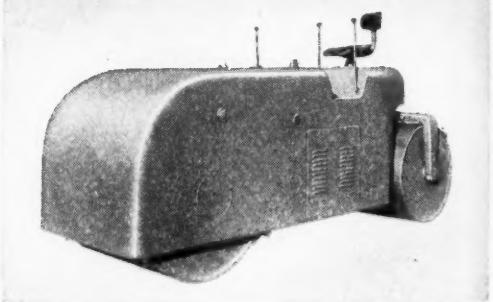
Huber 3-Wheel Rollers are available in 3, 4, 5, 8, 10, and 12 ton sizes.



The Huber Maintainer is a versatile machine to make short work of road and airport maintenance.



Huber Variable Weight Tandem Rollers are built in 3, 4, 5, 8, and 12 ton capacities.

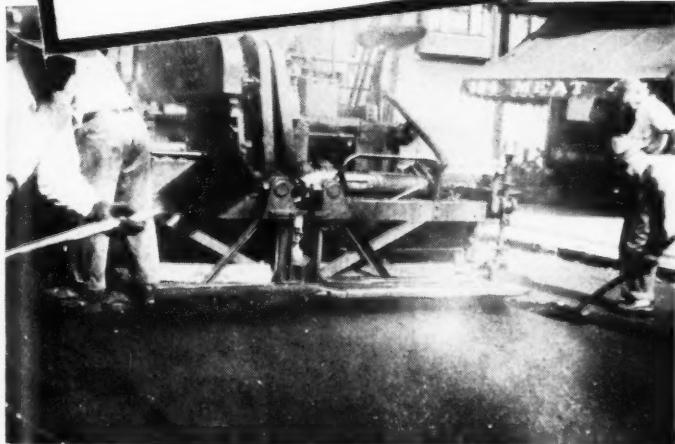


THE **HUBER** MFG. COMPANY • MARION, OHIO, U. S. A.

HUBER *3 Wheel • Tandem*
ROAD ROLLERS
MAINTAINERS



Catching up on its street paving



General view and close-up of Texaco Asphalt paving operations on Portland Avenue, Rochester, N. Y. Contractor: Thomas Holahan Company, Inc.

Rochester, N. Y. is catching up rapidly on street improvements postponed by the war. During 1946, approximately 50,000 tons of Plant-mixed Asphalt paving has been laid over Rochester's worn streets, transforming several hundred thousand square yards of such streets into smooth, resilient, durable riding surfaces.

The greater part of Rochester's 1946 asphalt paving program has been constructed with Texaco Asphalt. In the past, Texaco has been employed in paving more than 1,000,000 square yards of streets in New York State's third largest city.

To city officials responsible for paving, it is a reassuring fact that Texaco has been refining Asphaltic products from carefully selected petroleum crudes for more than 40 years.

For practical assistance with a street paving or maintenance problem, request the cooperation of a Texaco representative, who is an Asphalt specialist.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19



TEXACO ASPHALT

HEAT... where you want it with the HERMAN NELSON Self-Powered HEATER

can be used for:

SPACE HEATING of temporary buildings, storage sheds, repair shops, buildings under construction.

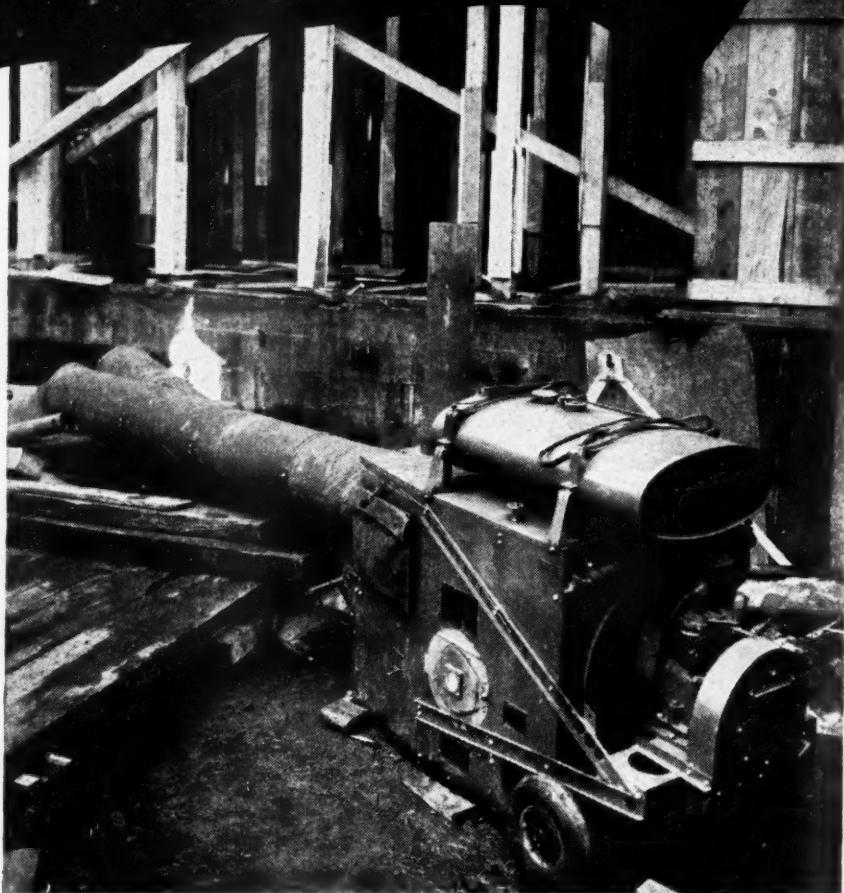
PREHEATING engines and all kinds of mechanical equipment.

SPOT HEATING of materials, workmen, machinery, storage tanks, tools.

THAWING frozen areas and machinery, wheels, gears, transmissions, caterpillars, etc.

DRYING and curing of materials, plaster, paint, mortar, concrete, etc.

VENTILATING and heating of manholes, tunnels, box cars, ship holds, confined areas of all kinds.



Keep Men on the Job in Coldest Weather . . .

Cut Winter "Waiting Time"

You'll be practically independent of winter's severest cold on any construction job with the HERMAN NELSON SELF-POWERED HEATER. Jobs go ahead faster, men are able to work better . . . it's easier to fill contracts on time by using this versatile source of heat.

There's quick heat . . . where you want it . . . with this portable self-contained heating unit. Burns gasoline by a new, safe method — requires little attention. Easily handled by one man.



THE HERMAN NELSON CORPORATION

for 40 years manufacturers of quality heating and ventilating products

MOLINE, ILLINOIS

IT'S NOT IN THE CARDS



*for any
Motor Grader
without
all-wheel
drive and
all-wheel
steer*

**to equal the all-around
performance of the "99-M"**

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U.S.A.

BUILDERS OF ROAD MACHINERY
Austin  **Western**
SINCE 1859

JUST A

Handful...

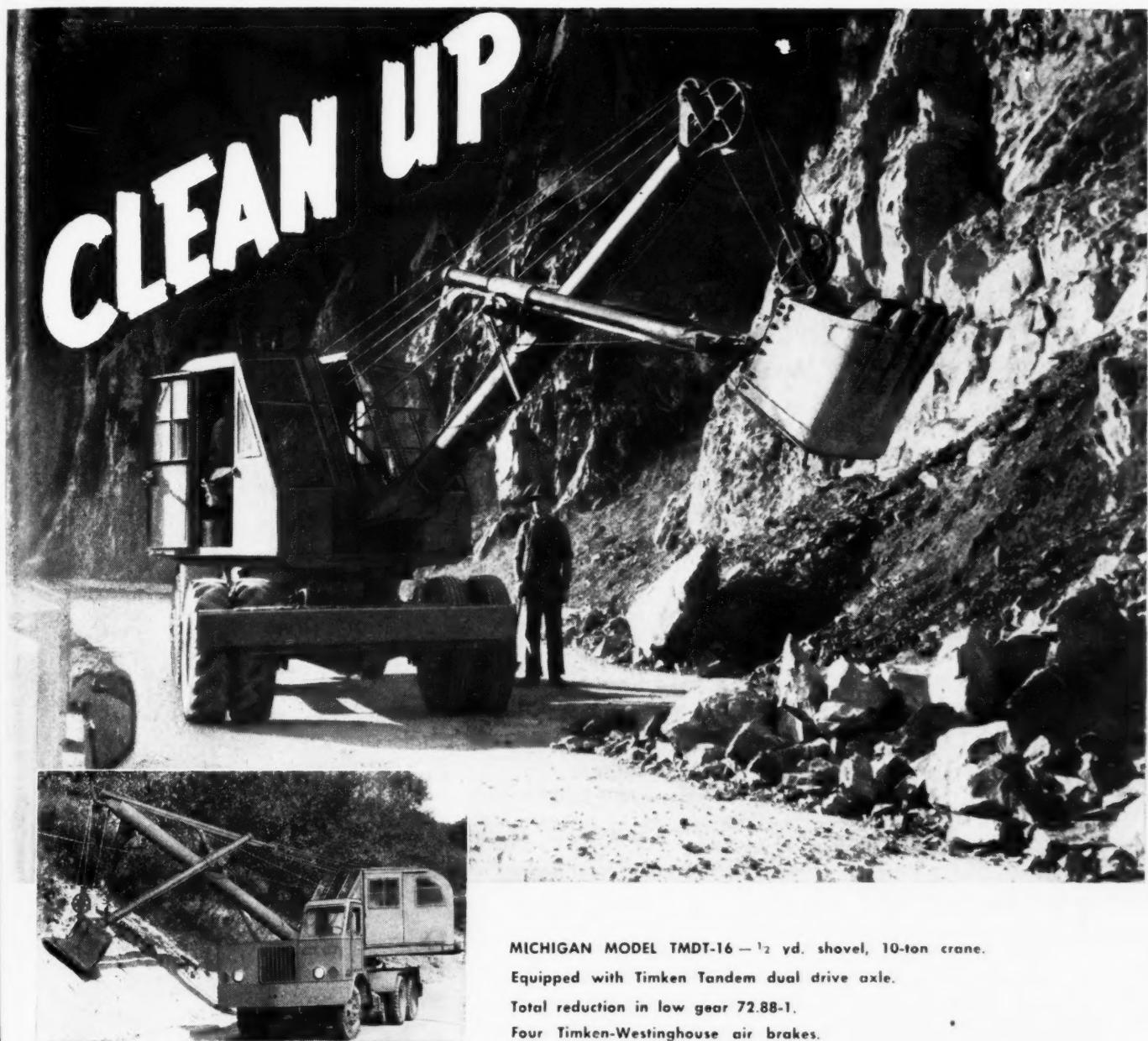
But with a light-weight gasoline-engine-driven Homelite Generator you have plenty of current to operate brilliant floodlights and cost cutting electric tools.

Let us give you a free on-your-job demonstration. Simply write us today.

HOMELITE

Portable PUMPS • GENERATORS • BLOWERS

HOMELITE CORPORATION
PORT CHESTER, NEW YORK



MICHIGAN MODEL TMDT-16 — 1/2 yd. shovel, 10-ton crane.

Equipped with Timken Tandem dual drive axle.

Total reduction in low gear 72.88:1.

Four Timken-Westinghouse air brakes.

with **MICHIGAN**

You'll be 'way ahead when schedules are tough and competition is tougher. You can cut cost-per-job, clean up even the tough ones faster with MICHIGAN Mobile SHOVEL-CRANE. Its truck mobility saves valuable time when traveling from job to job and permits easier, quicker movement on the job. Smooth-as-silk finger tip air controls plus

dependable, economical power give you that fast, steady performance that counts . . .

Plan now to put MICHIGANS on your jobs ! There's a complete line of $\frac{1}{8}$ yard and $\frac{1}{2}$ yard shovels, 6 to 12 ton cranes — all fully convertible, all one-man operated. Get the facts — ask for Bulletin CM-116.

MICHIGAN
POWER SHOVEL COMPANY
BENTON HARBOR MICHIGAN

How they broke a bottleneck



with steel MONOTUBES

IN a large, midwestern city a deep river valley divides the east and west sides. Every day many hours were wasted in traffic tie-ups, slow-downs over winding streets.

County authorities voted to break this bottleneck with a bridge . . . at that time one of the largest undertakings in the country. It had to be high to allow clearance for freighters. It had to be strong to withstand heavy traffic. It had to be durable, a lifetime investment.

For this structure architects and engineers sought the best materials. Monotube tapered steel piles were their choice for pier foundations.

Monotube's easy extendibility provided the variance in length necessary to meet the requirements of grade and valley soil. Their light weight, easy handling, tapered sections made quick work of a big job. Their tubular construction allowed complete inspection before concreting. Today, the sound condition of the bridge testifies to Monotube's strength.

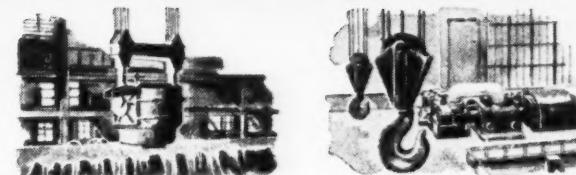
Maybe you have a foundation bottleneck that needs breaking. Union Metal engineers will be glad to contribute their real job experience to the solution of your problems. Wire, call or write The Union Metal Manufacturing Co., Canton 5, Ohio.

UNION METAL
Monotube Foundation Piles





This is how men get marble and granite out of the quarries. Derricks rigged with Preformed wire rope move heavy loads easily and safely. In rugged service like this, Preformed wire rope also lasts longer, thereby cutting costs of operation and replacement.



Wire rope transmits power to moving parts of machines. Preformed is ideal because it resists kinking and spoils evenly.

Generating plants are big users of Preformed wire rope. They benefit from its longer life...its easier handling.

As You See, It Looks Easy ...Thanks to Wire Rope

You never think of wire rope when you see granite blocks or marble slabs in buildings. You don't think of it when you push a light button or open your refrigerator door. But wire rope is used in providing you these and countless other everyday conveniences. Preformed is the wire rope preferred for many applications in almost every industry because it gives longer service and thus helps keep costs down.

Send for an interesting free booklet, "PREFORMED WIRE ROPE—WHAT IT IS—WHAT IT DOES." Write the Preformed Wire Rope Information Bureau, 520 North Michigan Avenue, Chicago 11, Illinois or

ASK YOUR OWN WIRE ROPE MANUFACTURER OR DISTRIBUTOR



"Better all-round efficiency, lower maintenance costs

with **Gulf Quality Lubricants and Fuels"**

says this highway paving Contractor*



"WE'RE PARTIAL TO GULF PRODUCTS because they help us get top performance from every unit of equipment—the kind of performance we need to meet finish dates on our contracts," says this Contractor.* "On every job we get good fuel mileage and low maintenance costs. Besides, we can always depend on the prompt delivery of every Gulf order."

On all types of construction jobs, Gulf quality petroleum products play an important part in keeping equipment rolling. Their extra value shows up particularly on tough schedules and under punishing operating conditions. Gulf lubricants provide greater protection against delays caused by mechanical troubles—and Gulf fuels help contractors get an extra margin of performance from their mechanized equipment.

Write, wire, or phone your nearest Gulf office today and arrange to use Gulf higher quality lubricants and fuels on your next job. They are quickly available to you through 1200 warehouses located in 30 states from Maine to New Mexico.

*Dickerson Company, Monroe, North Carolina, has the contract to pave 14.6 miles of a state highway near Canton, North Carolina. The project involves some grading and culvert work. This contractor has been awarded more than 70 paving contracts in North and South Carolina this year. Gulf products help keep every unit of equipment at top efficiency.



Gulf Oil Corporation

Gulf Refining Company

Division Sales Offices:
Boston • New York • Philadelphia • Pittsburgh • Atlanta
New Orleans • Houston • Louisville • Toledo

Now!

a 47-ft. Tower

— that "stands on its own feet" *

the "AMERICAN" MATERIAL ELEVATOR

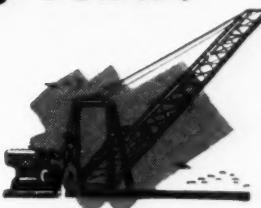


Here is the new "American" material elevator—a quickly erected, self-raising, 47-foot tower that operates without guys or bracing! Versatile, easy-to-use, it gives you a 40-foot lift of a 2500 lb. load on a lifting platform that accommodates two wheelbarrows or one concrete buggy! And it can be made higher by adding simple demountable sections as the job requires. Easily moved from job to job this new "American" is powered by the well-known 25 hoist—is already simplifying lifting problems on the widest variety of construction jobs.

... 47-Foot Self-Raising Tower!



EASY TO MOVE This material elevator goes from one job to the next in a hurry. Demountable sections may be loaded on a single truck, unloaded and assembled quickly.



EASY TO SET UP Assemble the sections on the ground; the "American" swings its tower into place under its own power. It saves time and money wherever it's put to work.

SEND FOR DETAILS! A new bulletin illustrates in detail the specific advantages and operating features of this new "American" material elevator. Ask for bulletin No. 200D6.

AMERICAN
HOIST & DERRICK CO.

St. Paul 1, Minnesota

CHICAGO NEW YORK SAN FRANCISCO



REVOLVERS

LOCOMOTIVE CRANES

HOISTS

DERRICKS

BLOCKS AND SHEAVES

CROSBY CLIPS

IT'S GOT WHAT IT TAKES to do the job!



The GENERAL Biting into the mucky clay, getting a full dipper load . . . swinging around and up, reaching 'way out . . . dumping the load exactly where it's wanted! In less time than it takes to tell it, the GENERAL power shovel has completed the operation and is swinging back for more.

Over and over again, under the most difficult conditions, finishing the work in a hurry . . . that's the way a GENERAL power shovel is built to operate. The record tells why you can depend on a GENERAL to come through, time and again, with efficient, low-cost operation. That means

time, money and manpower saved on your job when you've got a GENERAL. Plan now for the time when you, too, can enjoy the advantages that only a GENERAL can provide. The new GENERALS, tested and proved in service, will be ready soon information is available now.

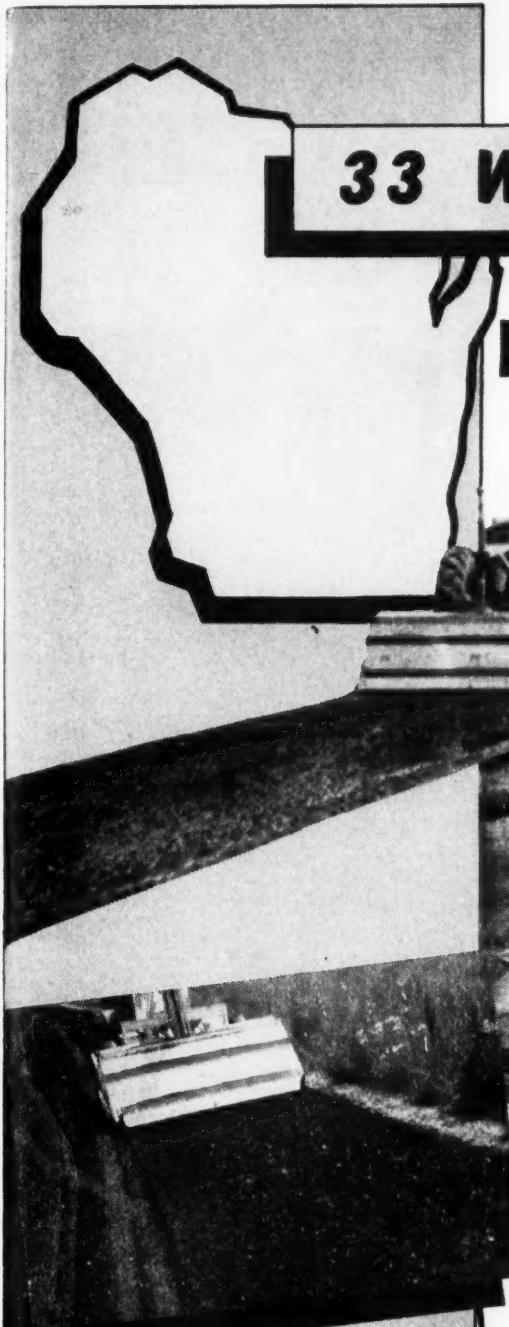
THE RECORD: 98% OF ALL THE GENERALS EVER BUILT ARE STILL IN ACTIVE SERVICE!

THE
OSGOOD
COMPANY
SHOVELS, DRAGLINES
CRANES
CRAWLER & WHEEL MOUNTS
DIESEL, OIL, GAS, ELECTRIC

Associated with The Osgood Company
GENERAL
EXCAVATOR CO.
MARIION, OHIO



GENERAL
CRANES, DRAGLINES
AND SHOVELS
DIESEL, GAS, ELECTRIC



Now
33 WISCONSIN COUNTIES

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SEAMAN**



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the Pace of New Building*



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Atkins No. 37 Mitre Tooth Saw shown above is ideal on portable power saws or saw tables. One of a full line of Atkins "Silver Steel" Circular Saws.



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A typical loading scene shows important elements of a genuine **ROCKMASTER** blast. 1. Your know-how (represented by the loaders at right). 2. Atlas know-how (the Atlas representative, at left, bringing the **ROCKMASTER** principle to the operation). 3. Properly chosen explosives and properly chosen **ROCKMASTER** electric detonators, which include **MANASITE**. 4. Proper loading of explosives.

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The Atlas Rockmaster Detonator—the secret of the one-two punch in the entirely new Rockmaster Blasting System—includes Manasite. The added safety that Manasite gives has been proved in years of use—millions of detonators. The Manasite detonating charge in the sensational new Rockmaster Detonators means less sensitivity to shock and friction—less operational hazard—at no sacrifice of blasting efficiency.

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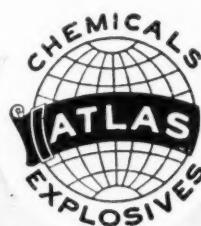
Genuine Atlas Rockmaster—an original Atlas development and the first post-war development in the explosives field—is the talk of blasters all over the country. From one operation after another, blasting reports attest to the fact that Atlas Rockmaster has broken all records for fragmentation of rock. As rock breakage has improved, shovel efficiency has increased. And believe it or not, these results are obtained with fewer complaints about noise or vibration from blasting. Call in the Atlas Representative. Ask him to tell you how Atlas Rockmaster combines split-second control and extra safety to bring you the first major blasting development since the war.

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machinery and other heavy loads, a load lowering device operating against

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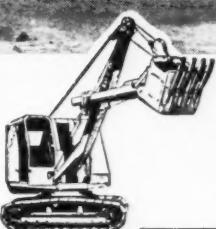
BAY CITY Crawler Cranes and CraneMobiles to speed material handling—

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a great NEW tire to meet a great service need

LONG-LIFE SERVICE OFF THE ROAD
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THIS is the new Road Lug tire — made to order by Goodyear for tough service operations demanding a tire built to go in OFF the road, bring out the load, then take the haul ON the highway.

In test after test — in strip mines, in rugged timber country, on tough access roads, and under punishing loads over the highway — this great husky *proved* brute enough to stand the gaff and gouging OFF the road, and roll up new mileage records ON the road. It *averaged* 33% longer tread wear and 25% longer tire life.

The reasons why are many. They include the specially designed tread that gives good traction and cut resistance OFF the road, and smooth rolling, longer mileage ON the highway. And they include the heat-resistant, extra-strong rayon cord body which provides added stamina and bruise resistance in this great hauler.

See your Goodyear dealer now for full data on the NEW Road Lug — the tire that will give you new performance standards, and another big reason why "more tons are hauled on Goodyear truck tires than on any other kind."

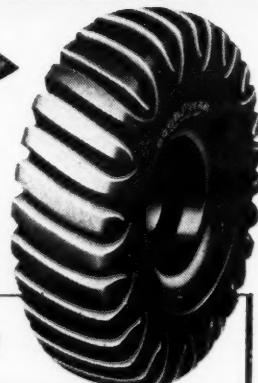
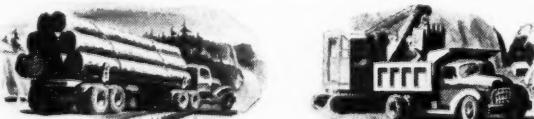
Road Lug—T.M. The Goodyear Tire & Rubber Company

GOOD  YEAR
Road Lug Tire

— tough running mate for Goodyear's famous

HARD ROCK LUG 

which is still the world's toughest work tire
for straight off-the-road service.



BUY and SPECIFY  — it pays!

Construction Methods

WALDO G. BOWMAN, Editor

Volume No. 28

NOVEMBER, 1946

Number 11



SLOPE SEEDER blows fertilized top-soil and seed mixture to vegetate inaccessible embankments. Shown here during test, rig is mounted on standard trailer drawn by wheeled tractor and is fed by hand-loaded belt conveyor. Unit may be mounted on farm-type trailer and fed directly from towing dump truck.

BLOWER SEEDS AND FERTILIZES FILLS AND CUT SLOPES

SLOPES AND HIGHWAY CUTS are vegetated and stabilized at low cost and without hand labor by a blower rig recently developed by Headquarters, First Army, Governors Island, N.Y. Consisting of a standard forage blower with a 25-hp. gasoline motor and a steel frame operator's platform, the trailer-mounted machine has successfully seeded, fertilized and mulched highway slopes as high as

50 ft. while operating on the roadway.

For seeding slopes, a pre-mixed batch of 15 cu. yd. of top soil, 75 lb. of grass seed, 1,200 lb. of 5-10-5 fertilizer and 2,000 lb. of ground limestone, if required, is fed into the blower hopper. A screw conveyor forces the mixture into an impeller fan that blows it on to the slopes through a discharge pipe equipped with a flexible nozzle

operated from an elevated platform. About 16 cu. yd. of the mixture will cover one acre to a depth of $\frac{1}{8}$ in. Hay or straw mulch can be applied with the same rig at the rate of 2 to 3 tons per acre to protect the newly seeded slopes, while fertilizer can also be applied with the blower unit to increase the density and resistance to erosion of previously established vegetation.



FORT PECK DAM SPILLWAY gets wet for first time as Army Engineers conduct operational tests on mile-long concrete-lined section. In foreground is structure, 800 ft. wide and 86 ft. high, which supports sixteen floodgates.

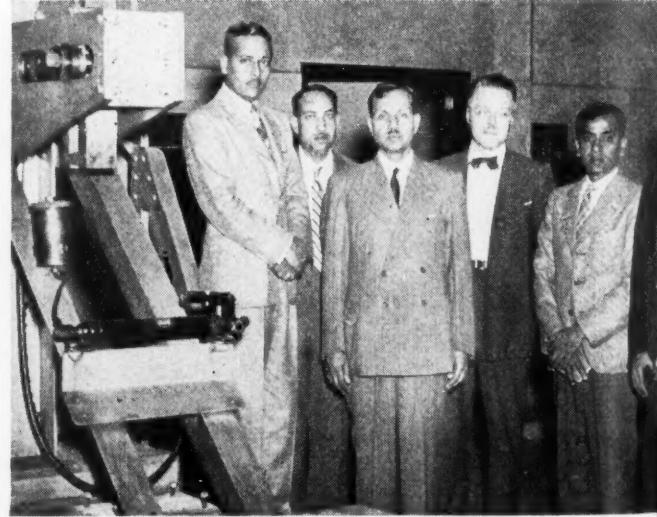
Wide World Photo

THIS MONTH'S NEWS REEL



PLASTIC HOUSES were featured at Berlin's first post-war housing exhibit in Germany's Imperial Palace. Here visitors inspect model of French round house. Entire exhibit was devoted to plastic prefabricated one-family units. Plans call for manufacture first for export.

Wide World Photo



ENGINEERS FROM INDIA are spending three months in United States studying roadbuilding methods. Inspecting Physical Research Laboratories of Public Roads Administration in Washington, D. C., are (left to right): L. T. AMINBAVI, assistant engineer, Bombay Public Works Department; S. M. NAIM, executive engineer, Northwest Frontier Provinces; A. C. MUKERJEE, supervising engineer, United Provinces of India; L. W. TELLER, physical research engineer, P.R.A.; K. R. REDDI, district board engineer, Madras; and M. C. PANI, assistant engineer, Public Works Department, Orissa. From Washington, delegation of 22 engineers went on field inspection trips throughout country.



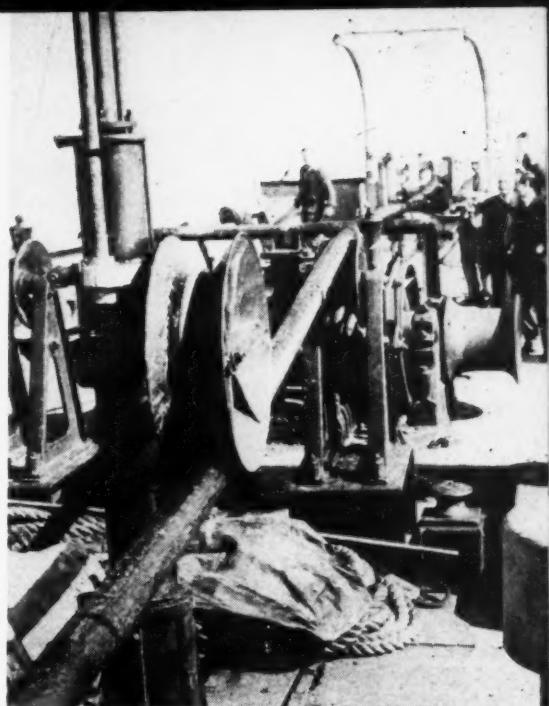
“HOUSING BEE” at Westport, Conn., cuts construction time on veterans' housing project as volunteer workers pitch in to help regular craftsmen. Alston Construction Co. is in charge of project.

Press Assn. Photo



PLUTO, pipeline under English Channel which carried fuel to Allied armies in Normandy, is being salvaged by marine engineers. Here former cable ship, Empire Ridley, reels in flexible pipe. Operation is expected to yield about 15,000 tons of lead.

Wide World Photo



FOLEY, commissioner, Federal Housing Authority, writes selling price on first sign, which is held for him by CLARK DANIELS, representing Standard Properties, builders of these homes at East Pines, Riverdale, Md. Looking on are (left to right): WILSON WYATT, National Housing Expediter; JOHN MOTLEY, congressional information officer, National Housing Agency; L. R. LEGENDRE, assistant national adjutant of American Legion; JACK HARDY, national commander, American Veterans of World War II; WESLEY PEARCE, national housing officer, Veterans of Foreign Wars; WILLIAM L. BATT, Middle Atlantic regional vice chairman, American Veterans Committee; MARKLEY SHAW, locality housing expediter, Washington area.

CONSTRUCTION of \$5,000,000 Delaware, Ohio, flood control dam gets under way (below). Crane is dumping concrete into forms for east wing of dam. Contractor is Johnson, Drake & Piper, of New York and Minneapolis.

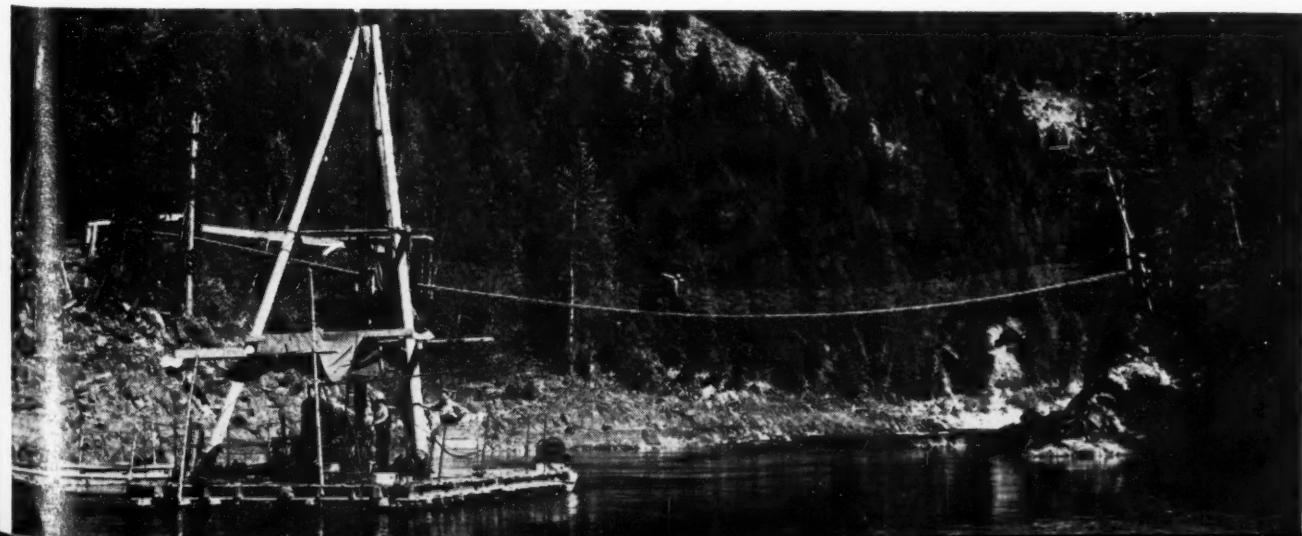
Wide World Photo



GI DORMITORIES were moved 40 mi. from Geneva Steel Plant near Provo, Utah, to house veterans at University of Utah. Here Allis-Chalmers crawler equipped with Buckeye bulldozer aids in job of moving 2,500 yd. of dirt in excavation and backfilling of sewer trenches for dormitories.



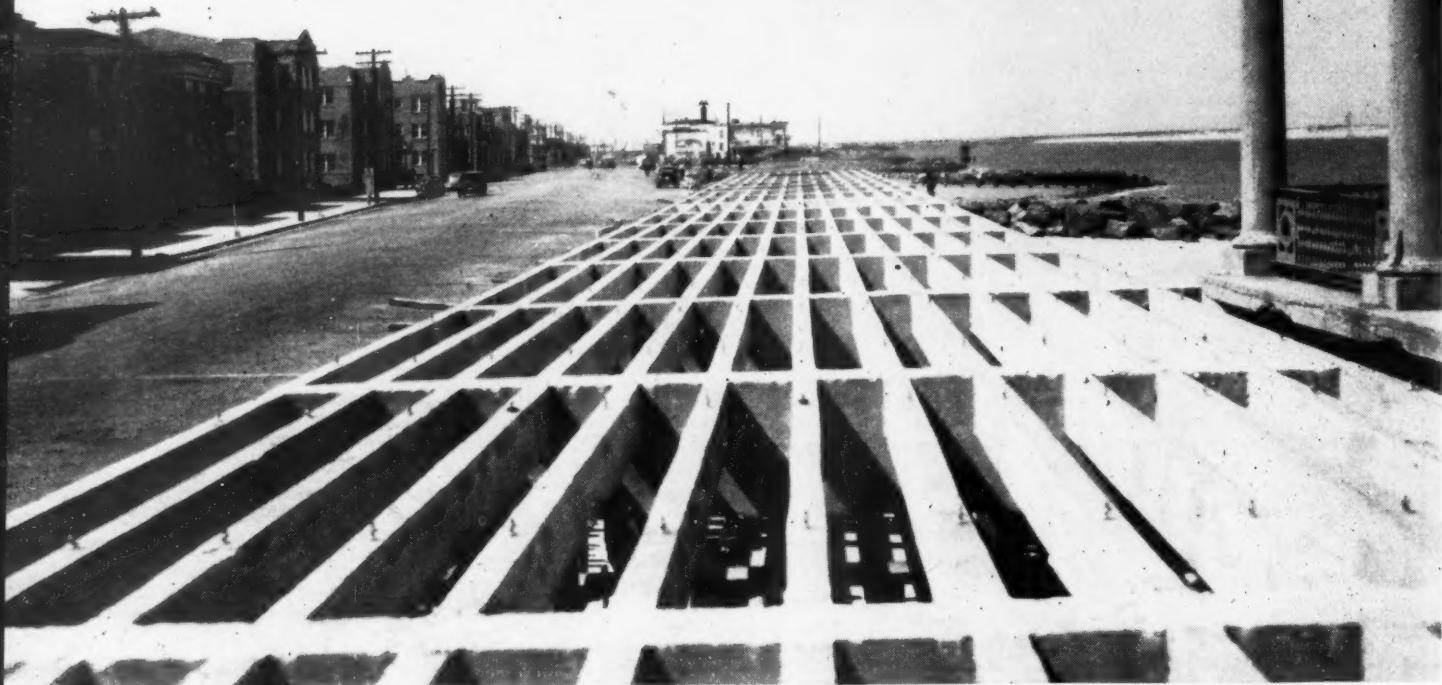
DIAMOND DRILLERS for U. S. Bureau of Reclamation probe bedrock of site for proposed Hungry Horse Dam (below) in Flathead River in northwestern Montana. Structure will provide storage for irrigation and power development at site.



ATLANTIC CITY BUILDS

Concrete Boardwalk

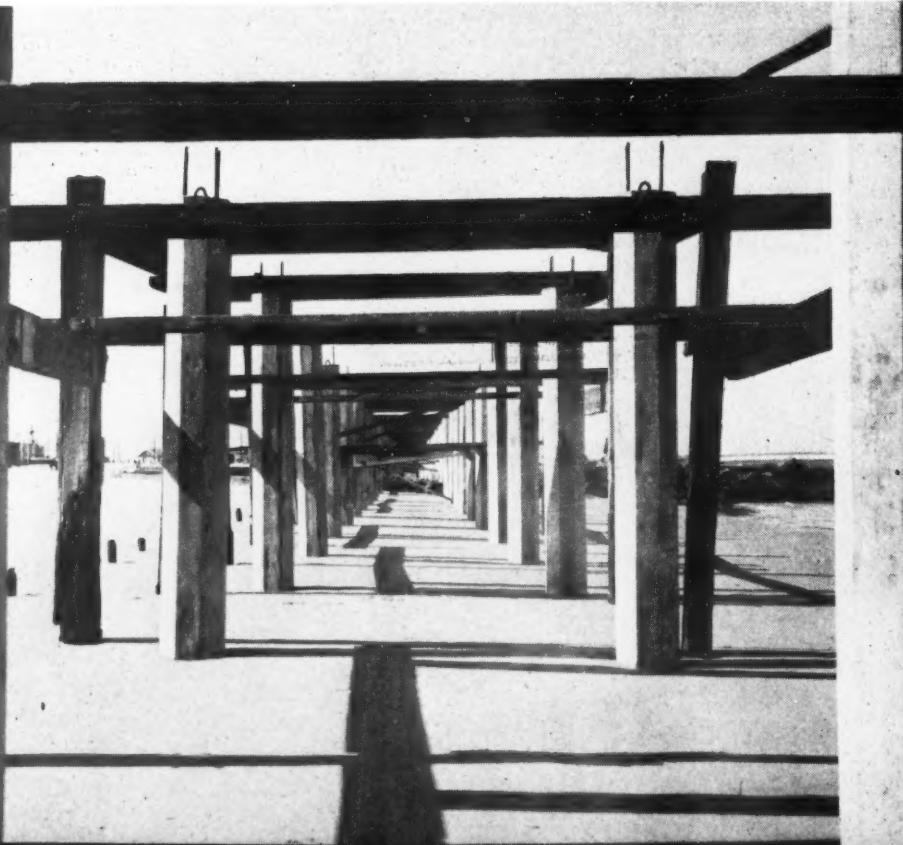
TO STAND OCEAN STORMS



ALL-CONCRETE SUBSTRUCTURE for new section of Atlantic City boardwalk features precast piles and stringers framed into poured-in-place pile cap girders.

Photos Courtesy Portland Cement Ass'n.

OLD PILES (below) surviving hurricane were utilized by contractor for working platforms and pile guides. This section is ready for capping and placing stringers.



WHEN THE HURRICANE OF 1944 ripped out a 2,800-ft. section at the north end of Atlantic City's famous 7-mi. boardwalk, Director of Public Works William F. Casey and City Engineer George R. Swinton determined the replacement would be designed and built for permanence. After careful consideration, the city authorities decided upon a design of all-concrete substructure with the traditional timber deck as a structure best suited to withstand the onslaughts of Northeasters in that exposed location along Absecon Inlet.

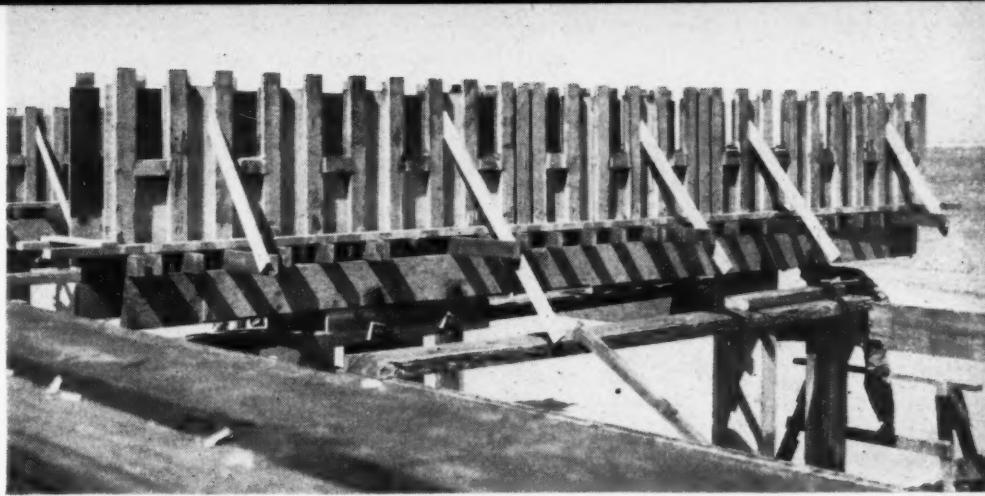
With an eye to simple and economical construction, as well as durability, George Swinton came out with a design incorporating precast concrete piles, a poured-in-place combination pile cap and girder, precast concrete longitudinal stringers and wood plank deck. Precasting the stringers had two advantages: production of better concrete under precise central

plant control, and simple construction eliminating the falsework and heavy forms required for poured-in-place procedure. Of course the pile cap girder could have also been precast, but, as Swinton points out, this would have required some kind of elaborate anchor system to tie the various members together. Encasing the pile tops and stringer ends in a poured-in-place girder, however, provided a rigid-frame structure. Hanging the girder forms from the piles eliminated all falsework.

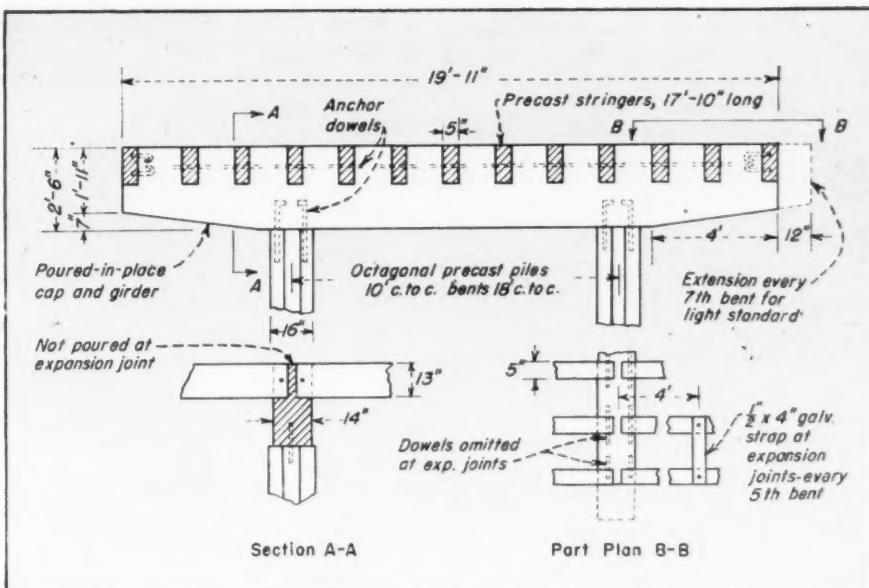
Structural Details

Because this section of the boardwalk is only 20 ft. wide, in contrast to 40 and 60 ft. for the more popular sections, only two piles per bent are required. The piles are 16-in. octagonal section, 32 ft. long with tapered points. They are spaced 10 ft. apart in the bents and the bent spacing is 18 ft. Precast longitudinal stringers are 5x13 in., 17 ft. 10 in. long, which, with the 18-ft. bent spacing, allows a 2-in. gap between ends of abutting stringers. Two galvanized bolts were cast into the top of each stringer to anchor a wood nailing strip for the boardwalk deck. At both ends of the stringers holes were cast to receive horizontal dowel anchor bars within the caps.

The pile caps or girders, poured in place, are 14x30 in., tapered to 14x23 in. at the ends, and are 19 ft. 11 in. long. A 12-in. extension is built into the oceanside end of every seventh cap to carry a light standard. Each pile carries four



GIRDER FORMS, slotted to receive precast stringers, are hung from piles, eliminating all falsework.

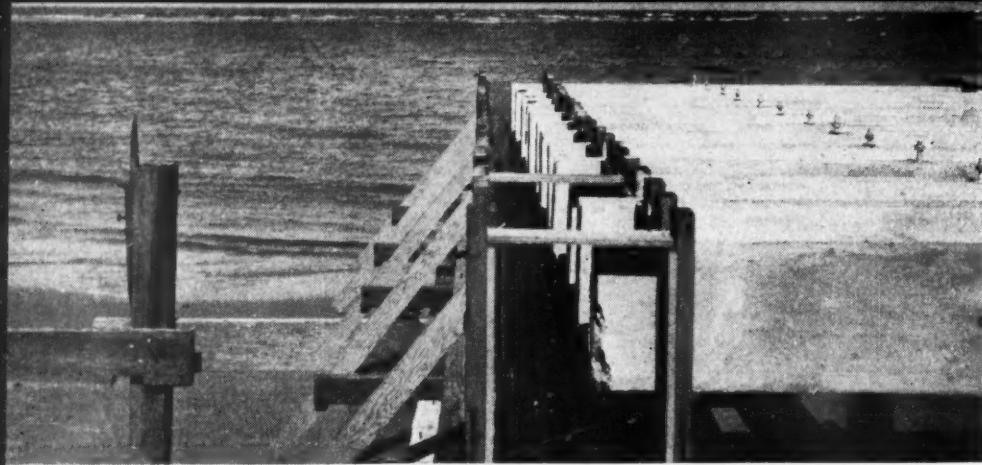


DETAILS OF SUBSTRUCTURE show how various units are tied together to resist uplift of storm waves. This design of precast piles and stringers framing into poured-in-place caps made construction simple.

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CLEARING OUT OLD PILES AND DEBRIS (below) leaves neat structure ready for traditional wood deck planking.





STRINGERS, set by crane, protrude nearly half way into girders. This is one of expansion bents, so dowel anchors in end of stringers are omitted. Stringers for span to left will be placed before girder is poured, but no concrete will be placed between abutting ends of stringers to allow for expansion.

hooked dowels extending well into the cap as an anchor. Thus the entire structure is well tied together, designed to resist wave uplift.

At every fifth bent is an expansion joint. Here ends of the stringers projecting into the caps are wrapped in building paper, and the concrete is omitted between the abutting stringers. Because the outside stringers are fascia beams, with no lateral support on one side,

these stringers are tied across to the adjoining stringers at expansion joints with galvanized $\frac{1}{2} \times 4$ -in. steel strips. At non-expansion bents, the fascia beams are tied into the caps with hooked dowels.

Simple Construction Procedure

Contract was let early in 1946 for the 2,800 ft. of new structure (exclusive of wood deck) to Anthony P. Miller Co., Atlantic City,

for a lump sum of \$156,480. For an additional \$40,740, Miller also was awarded the repair of several sections of the older type boardwalk partly damaged by the hurricane.

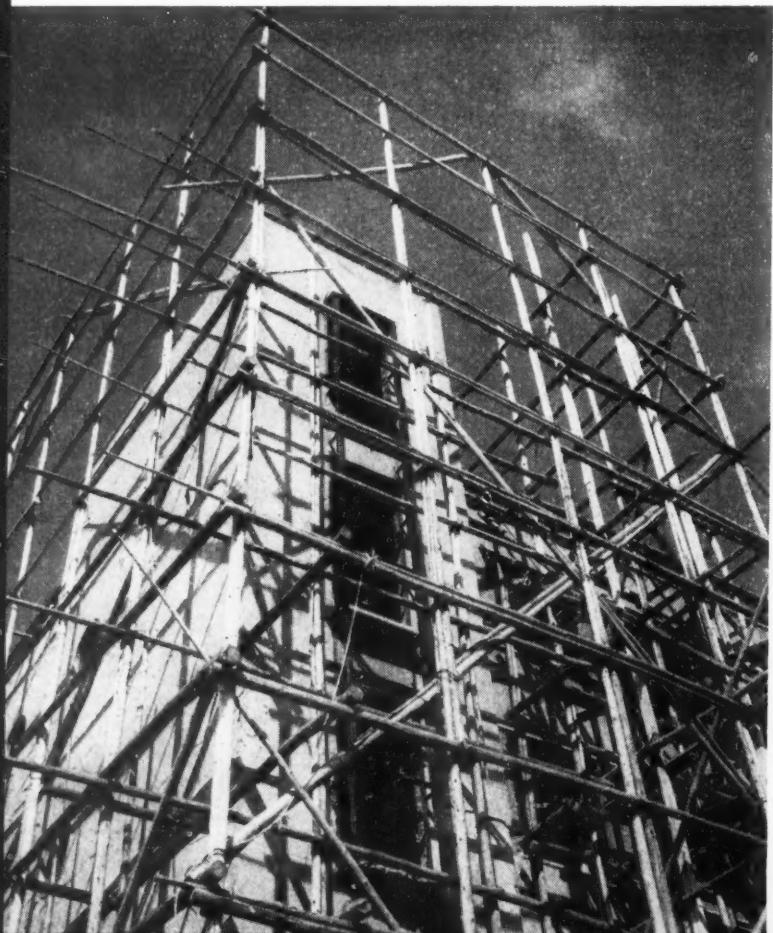
Because of Swinton's care in working out design details, construction operations were simple. Miller sublet casting of the piles and stringers to Formigle Bros., of Berlin, N. J., who cast the units at their home plant and trucked them 50 mi. to the job. Excellent concrete averaging 6,000 psi. strength in 28 days was obtained.

Piles were driven with leads handled by crawler cranes. The old wood piles remaining in place were temporarily left to serve as a base for working platforms, and later were entirely removed. After the piles were driven, forms for the girder caps were hung from tops of piles by Richmond screw anchors. Sides of the cap forms were slotted to admit the precast stringers. Stringers were set with a crane, the dowels inserted and then the cap was poured with transit-mix concrete.

Contract for the wood deck has been let, but progress is being delayed by lack of planking.

Scaffolding... Japanese Style

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IN RECONSTRUCTING the bomb-damaged Sanno Hotel in Tokyo for occupation by American Army personnel, the Japanese contractors, Ando-Gumi Co. Ltd., resorted to ancient oriental methods of scaffolding because of shortage of modern materials. Lacking nails, clamps, pipe and steel members, the contractors used lashed-pole construction for encasing the entire 4-story structure in scaffolding.

The accompanying pictures show details of the scaffold. Even the diagonal bracing is poles lashed to the vertical and horizontal framing. Some of the lashing is wire, as shown here, but when the wire ran out, rope and reed thongs were used. Planks are mighty scarce, so a few single planks, moved around as needed, must serve as scaffold platforms.



Press Assn. Photos

*Cited
for
Service*

GREAT MEN leave great works behind them as evidence of service to mankind. Curtis S. Garner, recently retired as vice president in charge of erection for the American Bridge Company after 50 years of service, leaves scores of big bridges and towering structures throughout the world as monuments to his long successful career. The public rightfully praises the promoters and designers of daring structures, but all too often forgets the men who transform the plans into the final physical form. In his quiet, soft-spoken way, Curtis Garner for a half a century applied his ingenuity, resourcefulness and skill to the physical transformation of engineering dreams.

Born in Shady Grove, Tenn., June 5, 1876, Garner received his advanced education at the University of Pennsylvania. He entered bridgebuilding as a time-keeper for the old Milwaukee Bridge Co. in 1895, which became a part of American Bridge in 1900. Despite his success and achievements, he never took credit for himself, but always praised the men who worked with and for him. In commenting upon his career to the editor, he stated: "The happiest moments of my 50 years of experience in structural steel were when we called in the organization that was to carry on some big proposed project and said 'Let's get going boys!' The manner in which the work was executed was a stimulant to the management." He also paid tribute



CURTIS S. GARNER

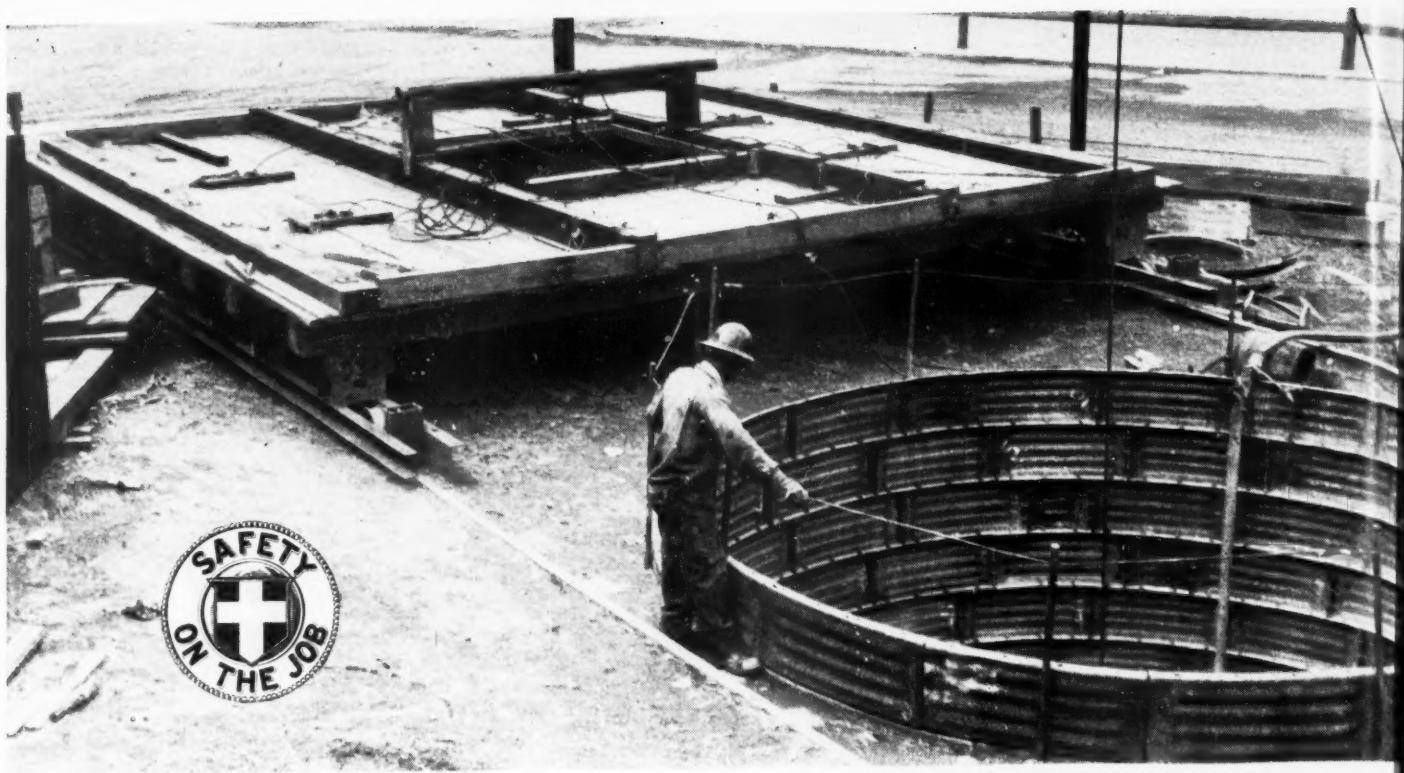
to the men on the job: "I have worked with structural ironworkers for 50 years, and I don't know of any class of men who are better producers. They are willing, daring and energetic, and work with a fine cooperative spirit." Those remarks gage his qualities of leadership.

Ever believing in modern methods, Garner eventually scrapped all of the traditional travelers, old-fashioned derricks, falsework, hoisting engines and air compressors to modernize his operations with crawler and locomotive cranes, roller-bearing hoists and steel derricks, high-pressure compressors and steel falsework.

Famous bridges erected under Garner's direction include the San Francisco-Oakland Bay suspension spans, Huey Long bridge at New Orleans, Whitestone, Triboro, Ma-

rine Parkway and Henry Hudson bridges at New York, Florianopolis suspension bridge in Brazil, Hurricane Gulch arch on the White Pass & Yukon R. R., and Tanana and Gold Creek crossings on the Alaska R. R., the latter three built under extreme weather conditions. He also built the Liard River suspension bridge and the Tanana cantilever on the Alcan Highway. His bridge and building activities took him to many foreign lands.

Wherever he went, Garner's quiet forcefulness, his loyalty to his men, his attention to equipment betterment and accident prevention, and his high regard for the client endeared him to all with whom he had contact. The Biblical Prophets must have had men like Curtis S. Garner in mind when they wrote: "By their fruits ye shall know them."



DURING BLAST. platform is rolled over shaft as protecting cover. Here stiffleg derrick is lowering blasting mat into place within shaft. Platform is pulled into and out of position by derrick line.

ROLLING TIMBER PLATFORM, on wide-gage track, protects traffic property against flying rock when in shaft is fired. Platform carries mat against under side of deck, which is dropped 12 ft. during blasting. When in use, as shown here, platform is back out of way. Note safety cable shaft collar, carried by pipe stand.

ROLLING PLATFORM Covers Shaft During Blast

EXCEPTIONAL SAFETY houses
CAUTIONS for the protection of
traffic and adjacent property
considered desirable by the ~~and~~ ^{Assembly} ~~under~~ ^{the} ~~head~~ ^{of}
Corporation, Pittsburgh, in the ~~balance~~ ^{balance} ~~loads~~ ^{of}
a 17½-ft. circular shaft ~~loads~~ ^{deep} in rock at a busy street. The ~~nearby~~ ^{nearby} ~~in~~ ⁱⁿ ~~Philadelphia~~ ^{Philadelphia}. The shaft ~~is~~ ^{has} ~~an~~ ^{eastern} access to an 1,100-ft. ~~as~~ ^{long} tunnel to be driven under the ~~nearby~~ ^{nearby} Schuylkill River ~~forming~~ ^{forming}

Philadelphia Electric Co. Located at Christian St., and Schuylkill Ave., the shaft lies across the street from the Schuylkill generating station full of delicate circuit breakers and instruments, close to the Warner Company ready-mix concrete plant, and in the shadow of a transformer and switch yard.

While streetcar, vehicle and pedestrian traffic can be stopped during a blast, there is always the possibility of someone slipping by the guards, and besides, absolute protection had to be afforded the surrounding property against flying rock. To provide the necessary protection, Dravo's general superintendent H. C. Richardson devised a rolling platform that covers the shaft during blasting, from which a blasting mat hangs within the shaft.

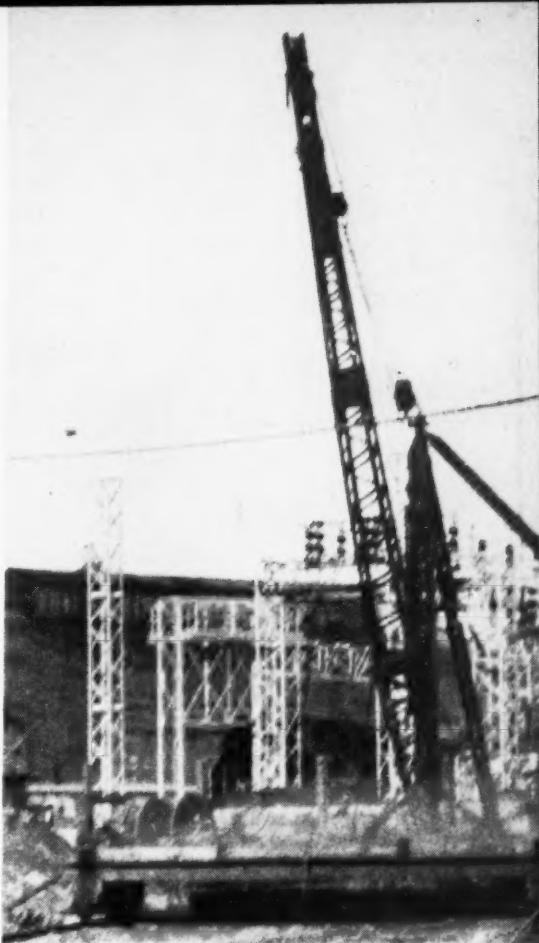
The platform, 24 ft. square, is mounted on four wheels on a 21½-ft. gage track that straddles the shaft collar. It is made up of 8x8-in. timber framing with 2-in. oak planking, with deck level 3 ft. above ground. A 7x7-ft. opening at the center helps relieve the blast concussion. The platform was de-

signed to carry a deck covering of sand, but this additional weight has not been found necessary.

Hanging by cables from the platform is a 16x16-ft. blasting mat, rolled back at the corners to fit roughly the circular hole. When the platform is not in use and rolled back out of the way, the mat is snubbed tight against the bottom of the platform by cables looped around a supporting rail on top of the deck.

When a round is loaded and wired ready for firing, the platform is pulled over the shaft by the same stiffleg derrick that handles muck and concrete. Then the blasting mat cables are hooked to the derrick load line, lifted sufficiently to release the dogging rail, and then lowered to drop the mat into position 12 ft. below the collar. After traffic is stopped, the round is fired from a double safety switch on a power line.

Though the 75-hole rounds, drilled to pull 4 ft., are fairly heavily loaded with 90 lb. of powder, fired in four delays, nothing but a puff of smoke has ever got past the mat and platform.



NO ROCK, only a puff of smoke, gets by mat and platform when round is fired. Note close proximity of shaft to transformer and switch yard beyond derrick.

Euclid's Roll Off Assembly Line

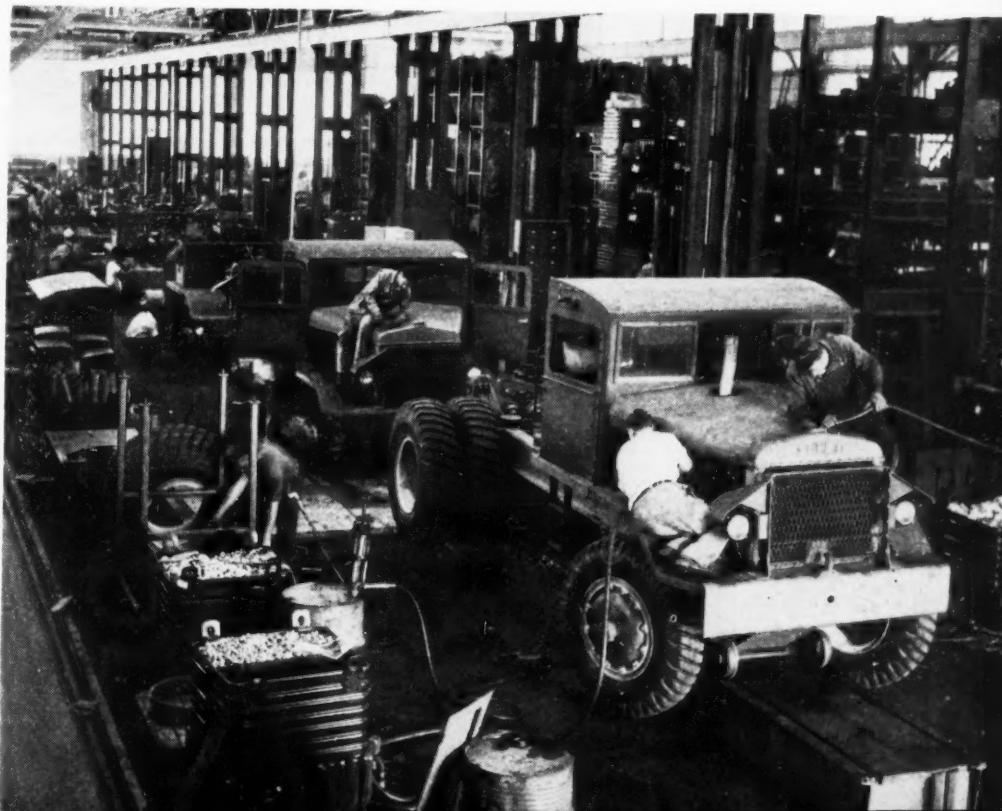
ASSEMBLY LINE PRODUCTION of heavy earthmoving equipment is a feature at the new plant of Euclid Road Machinery Co. in Cleveland. The assembly line process is a new idea for large-size construction machinery manufacturing, though tractors and engines are made in this manner.

The first unit of the new plant, now in operation, consists of a building 142x460 ft., laid out in two 70-ft. bays, one of which houses the assembly line. Small

assembly parts are stored in bins beneath a balcony, while larger parts are stacked on the balcony, designed for floor loads of 1,000 lb. per sq. ft.

The new plant was designed by L. M. Morse & Co., Cleveland, and was built by Albert M. Higley Co., under the general direction of R. Q. Armington, Euclid general manager, G. E. Armington, factory manager, and Hugh Monson, chief industrial engineer.

JUST LIKE AUTOS, big Euclids are assembled in rolling line production at the company's new Cleveland plant.



Truck Crane Parks Heavy Beam on 13-Story Roof in Two Lifts

Photos by Mal Gurian



1 TRUCK CRANE at street level, with outriggers firmly blocked, starts first of two lifts to raise heavy beam to roof 150 ft. above curb.



3 IR
on
4 GU
pole
AIDED BY A GIN POLE, a Lorain Moto Crane, with only an 80-ft. boom, sitting on the street neatly lifted a 2½-ton steel beam from a truck to top of the 13-story Bloomingdale department store in New York City, a hoist of 150 ft. The beam, a 28-in. 125-lb. section 40 ft. long, is part of the framing of a new water cooling tower being erected by Turner Construction Co.

The steel subcontractor, White Plains Iron Works, set up a gin pole overhanging the roof at the side of the building. Then the truck crane hoisted the beam to the roof of an offset section of the building 70 ft. above the street. Here the beam rested while a line was run from the crane hoist drum up through a sheave on the gin pole, and back down to the parked beam. Guided by taglines, the beam was then hoisted the remaining 80 ft. to roof level, where it was set on rollers for moving into final position. The whole operation took only 29 min.

The accompanying illustrations show the step-by-step procedure.

2 CRANE'S 80-ft. boom is just long enough to maneuver beam to temporary resting place on offset cornice, 70 ft. above street.



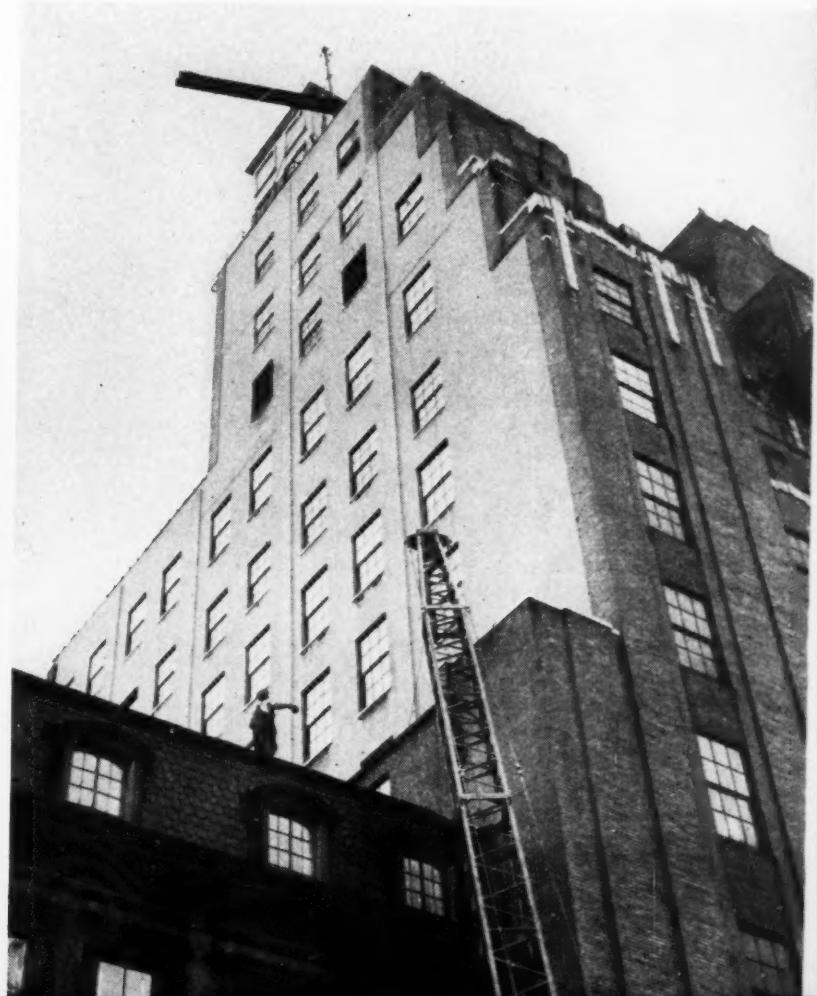
3 IRONWORKERS juggle beam to balanced position on building offset. Here it remains while hoist line is run through gin pole on top of high building.

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4 GUIDED by tagline, beam slides up side of high building. 5 JOURNEY'S END. When beam reaches roof level it is pulled on to set of rollers for moving into final position.

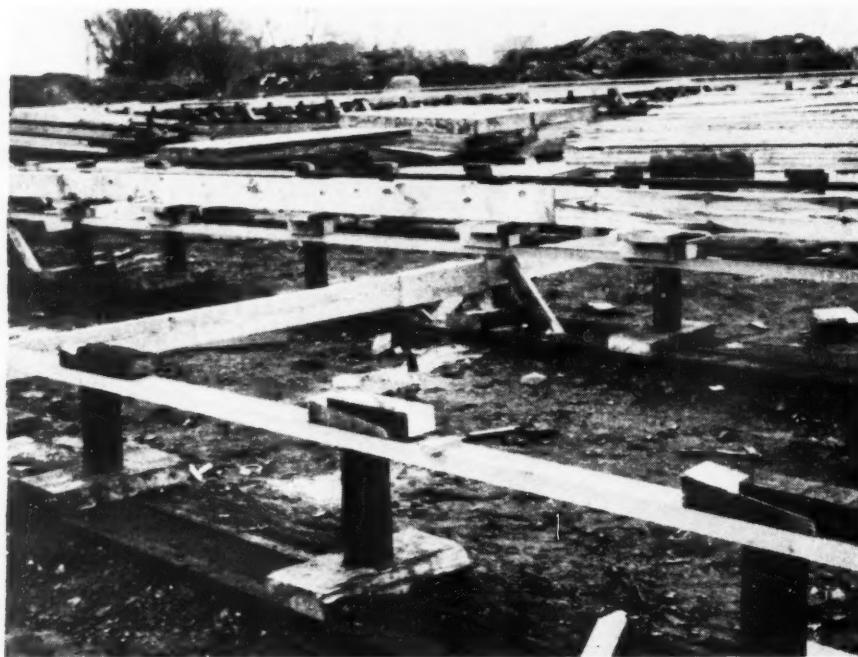
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resting
e street.

TEMPORARY HOUSING SUPPORTED ON BAD GROUND

By JACOB FELD, Feld & Timoney, Consulting Engineers, New York, N. Y.



FOUNDATION SILLS for barracks-type building converted to temporary housing are creosoted, cleated timbers resting on cinder bed 3 to 12 in. thick.



BUILDING SECTIONS are erected and wedged on top of 4x4-in. posts. Marginal land areas where buildings are erected consist mainly of thin cover over ash, garbage or rubbish fills.

SOME 9,000 FAMILIES of war veterans are being provided with shelter in nine temporary housing projects in New York City, and land available for immediate construction under such a large program is necessarily limited to marginal areas. With the exception of two sites, all projects are on filled ground; either public sanitary garbage and rubbish fills or privately developed coverage of marsh lands.

The problem of developing a sufficient, and at the same time an easily installed and economical support for these buildings, which are one-story war housing, Quonset huts or prefabricated barrack-type structures, was undertaken at the beginning of the program. There was no time for extensive soil or loading tests, nor was there any value to such tests due to the great variety of almost universally unsatisfactory ground conditions encountered. Some test pits were dug, only to confirm the expected —that the sites consisted of thin earth or sand cover over loose ash, garbage and rubbish fills from 5 to 30 years old. The general principles set were:

- (1) Existing surface has better supporting capacity than any lower strata at reasonable depths.
- (2) Additional fills necessary should be of very porous materials.
- (3) Base pressures at the surface should be held to 500 lb. per sq. ft. maximum under probable live loads plus full dead loads.
- (4) Differential settlements should be expected in any buildings over 50 ft. in length and adjustment facilities must be provided.
- (5) No special drainage provisions are necessary, since the ground areas are so porous that no frost action on the foundation is to be expected.

Some of the buildings are row houses 20 ft. wide and from 100 to 188 ft. long. The usual founda-



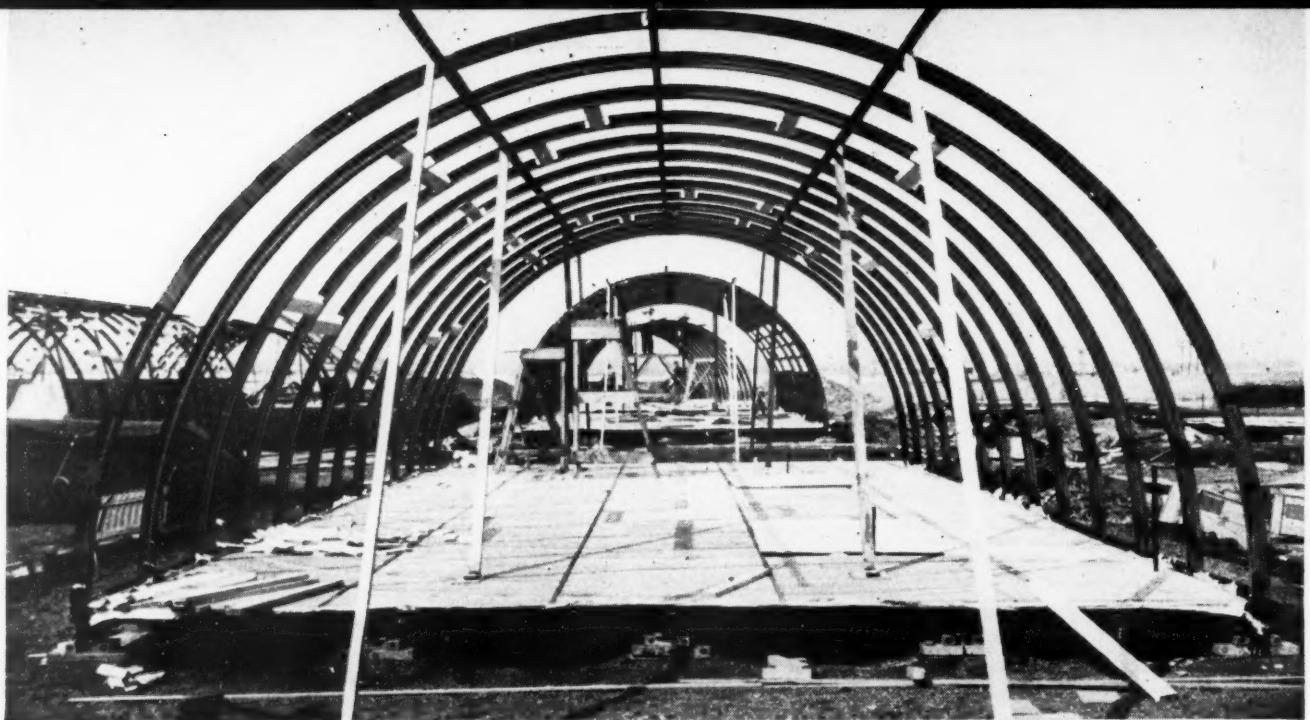
COMPLETED BUILDINGS have apartments with three to six rooms and are grouped in communities of from 330 to 2,036 families. NO building settlement has been found despite bad ground conditions.

tion for these consists of salvaged timber and sills: normally 3-in. wood beams from demolished buildings or rough dunnage timbers, set on a rolled bed of cinders. On the best ground, i.e., old ash fills, the cinder bed is 3 in. thick and the sills are 3x8's or 3x10's laid flat. On the worst ground, which is a sanitary fill with less than 1 ft. of sand cover, the cinder bed is 12 in. thick and double sills are required. The buildings are supported by foundation posts from 4 to 6 ft. apart, resting on cleats which cover the double sill. Spacing of posts is determined by sill stiffness and the strength of the girders provided with the building. On the top of the posts is a continuous tie of 2x4's or 2x6's, with double wedges over each post to support the building, which is brought to the site in sections. Removable panels are provided for access and adjustment of the wedges, but inspection

STEEL PILE SPUD (below) punches footing holes through fill containing many obstructions. Objection to method is lack of excavated material for backfill.



TRUCK-MOUNTED EARTH AUGER bores holes for concrete spread footings used where there is shortage of sill timbers. Obstructions in filled ground slow boring operations.



QUONSET HUTS rest on sill blocks to provide air space below floor. Sill timbers are set in leveled cinder bed, but on steeper slopes block thickness is varied.

made after three months' occupancy has shown no visible differential settlements.

At two of the sites, a shortage of sill timbers required different foundation methods. The fills were fairly solid, and individual concrete spread footings 1½-ft. square were spaced 8 ft. longitudinally. Hand excavation of pits was tried at both projects but was discontinued because of slow progress and excessive costs as compared to the sill foundation procedure. Truck-mounted earth augers were then tried, providing holes about 2 ft. in dia., but the presence of broken rock and other obstructions in the fill seriously slowed up the operation and it was difficult to get a good line of holes. To save labor and to provide some anchorage, the wood posts are hung in position and to grade, and are concreted into the footing pad.

A novel procedure for eliminating the rock fill difficulty at one site was developed by the Mutual

Construction Corp. A steel pile spud, 18-in. square with a blunt wedge point, is driven into the ground by a Super-Vulcan 50C air-hammer slung on hanging leads from a 35-ft. crane boom. In 12 hr. the rig can punch some 400 holes 3½ ft. deep, each requiring about 85 blows, but actual performance is reduced by about 40 percent lost time in repairs and adjustments. Vibration from the hammer causes some slippage of soil from the sides of the hole and can be felt 50 ft. away. About a foot of concrete is placed in each hole and a wood foundation post is set on the pad. One objection to this punching method is the lack of excavated material to backfill around the posts.

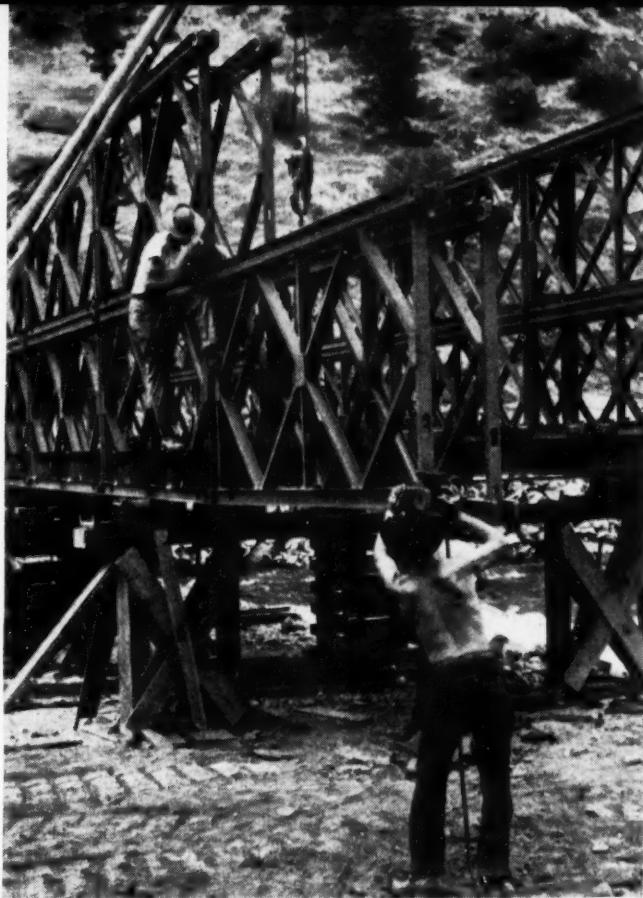
Where 20x48-ft. Quonset huts are erected, they are supported by sills along each wall line and by three intermediate longitudinal sills, the number of sills dictated by the floor construction. In very bad ground the exterior sills are

double 6- or 8-in. planks on a 3- to 12-in. cinder bed, while all interior sills are 2x6's or 2x8's. Since there are no posts under this type hut and since some air space is desirable below the floor construction, the framing is set on blocks 4-ft. o.c. resting on the sills. Where the site is not level, the cinder bed thickness is varied to form a level sub-base, and in extreme cases the thickness of blocks is varied. Prefabricated metal barracks, 20x48 ft. in plan, are used at some sites and are treated similarly, except that angle legs 4 ft. o.c. are wedged and cleated to the sills.

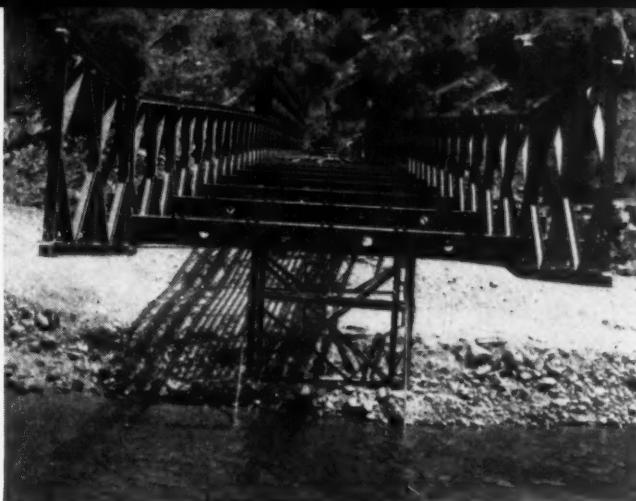
Construction of the temporary houses is a joint venture of the New York City Housing Authority, which provides land and utilities, and the Federal Public Housing Authority which supplies, erects and equips the buildings. The emergency veterans' housing in New York City is under the control of Region II of the Federal Public Housing Authority, for whom Raymond C. Snow is State Area Supervisor and Harry Einberg is Regional Structural Engineer. Leo Hirsch, John Hannan, George Small and Stanley Moore are project engineers in direct charge. Site planning and utility construction is under William Vladeck of the New York City Housing Authority, while all foundation work is under the direction of Feld and Timoney, consulting engineers for the F.P.H.A.

COMPLETED HUT houses two families. Cinder slope will be given emulsion penetration spray or covered with 2 in. of cold-mix asphalt paving.





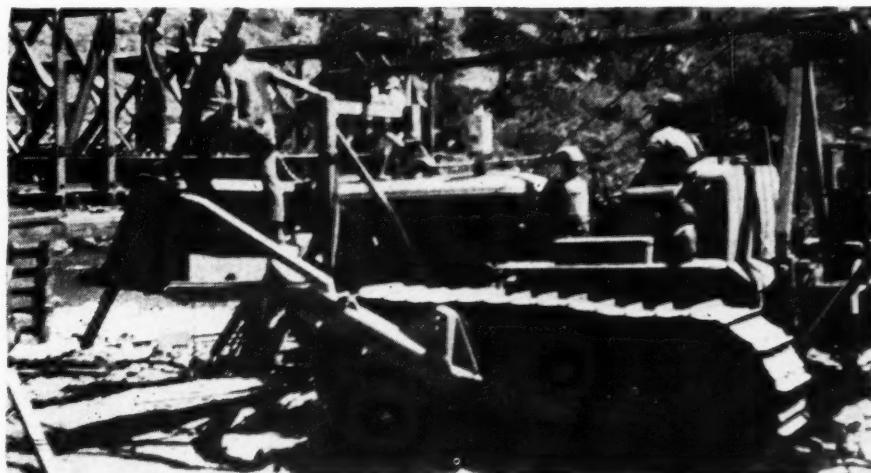
1 BAILEY BRIDGE units are assembled on shore for launching by cantilever method over Kings River in Sierra National Forest in California.



2 STRUCTURE is "double-double" type of Bailey truss, four units two wide and two high for each truss. Temporary launching nose, (foreground) was built up of single units. Bridge was pushed across stream from far shore, balanced on temporary roller pier on river bank.

Surplus Bailey Bridges

Now in Forest Service



3 AS UNITS were assembled on shore, structure was pushed out over stream by bulldozer. Shore end of bridge was always kept heavier than river end during launching operations.

BAILEY BRIDGES, those portable versatile units that proved so valuable for military operations, have now found a peacetime use in the U. S. Forest Service. Last spring Anthony P. Deane, chief engineer, California region, purchased 450 ft. of surplus Bailey units from W.A.A.

A 150-ft. span has been placed in permanent service over Kings River above the junction of the north fork in the Sierra National Forest in California. The remaining 300 ft. will be kept for emergency use, such as forest fire access and temporary washout repairs.

The accompanying views show the assembly and erection of the span, completed in five days after the concrete abutments were ready. P. M. Birkinbine was construction engineer in charge.



4 BUILT FOR WAR SERVICE, Bailey bridge units, assembled in "double-double" arrangement, become permanent structure on California Forest Service road over Kings River.

PRE-STEAM CLEANING Of Equipment Before Overhauling SAVES TIME AND MONEY

By JAMES M. O'NEILL

Supt. Maintenance, C & F Trucking
& Contracting Co., Butte, Mont.



MAINTENANCE SUPERINTENDENT
JAMES M. O'NEILL checks preformed
wire rope to go on 1½-yd. shovel,
which has been given major overhaul.
He is responsible for pre-steam clean-
ing of equipment in his shop and finds
it pays off.

SIX YEARS' EXPERIENCE has proved to the C & F Trucking and Contracting Co., Butte, Mont., that pre-steam cleaning of all of its equipment before overhauling saves both time and money. For

the last six years, except for a few months in 1945 when the original equipment wore out and we were awaiting a new unit, we have thoroughly steam-cleaned every piece of equipment that has come

into our shop for major repairs. This includes everything from our 5-yd. Monighan walking dragline to the smallest pickup truck. Our equipment, which includes graders, shovels, trucks, rollers, crushers, draglines, tractors and scrapers, is used throughout the Northwest on hauling, highway, railroad and open-pit mining operations.

Our present steam cleaning unit, rated at 60-gal. per hr., consists of a diesel fuel oil heating unit, an electrically-operated pump, and a 10-gal. solution tank. The unit installed cost \$1,165.

The steam cleaning unit is located in a 7x4-ft. room, at the center of one side of our washrack. We are using 1½ lb. of standard commercial cleaning soap powder to 10 gal. of water. The water is directly connected to the unit under city pressure and is continuously converted into steam. The hot hose connected to the unit is long enough to reach any point of a 15x30-ft. washrack or extend to any point of the 20x30-ft. paved driveway at the door of the washrack.

Before overhauling, the equipment is run on to the washrack floor, or if too large, on to the paved drain at the entrance, and given a complete steam cleaning.

For the average 1½-to-2-yd. shovel steam cleaning job, it re-



STEAM CLEANING UNIT consists of diesel heater, electrically-operated pump, and 10-gal. solution tank. Average 1½-yd. shovel steam-cleaning job requires 16 hr. time, 5½ lb. of soap powder, and 10 gal. of diesel fuel, total cost of only \$25.

quires 16 hr. time, 5½ lb. of soap powder, and 10 gal. of diesel fuel oil. Figuring the labor at \$19.20 for the 16 hr., plus tax, and the fuel oil and soap at \$4 per unit cleaned, the pre-steam cleaning cost is approximately \$25.

For an 8-yd. semi-trailer dump truck the cleaning time and cost runs the same. On the trucks we have kept comparative time and cost charts on major overhaul jobs, both with and without pre-steam cleaning. From these records we are convinced that pre-steam cleaning cuts major overhaul time by as much as three days. Furthermore, it reduces the time required for the 1,000-mi. checkups and the general year-through, repairs.

Picked at random, the yearly labor charge against three 8-yd. semi-trailer dump trucks serviced during the year and given one major overhaul job ran as follows:

WITHOUT STEAM CLEANING

Unit	Labor Charge	Material Charge
No. 1	\$1,427.17	\$1,661.02
No. 2	1,328.85	1,959.38
No. 3	1,213.80	1,954.81
Total	\$3,969.82	\$5,575.21
Average	\$1,323.27	\$1,858.40

Considered in the above yearly labor and material figures for the three trucks was one major overhaul job for each truck. These major repairs averaged \$500 for labor and \$650 for material per truck.

These figures are for 1945, when our steam cleaning unit was out of operation for six months.

From 1944, yearly labor and material charges against three 8-yd. semi-trailer dump trucks, given one major overhaul job each, ran as follows:

WITH STEAM CLEANING

Unit	Labor Charge	Material Charge
No. 1	\$1,085.49	\$1,117.21
No. 2	1,200.80	1,243.41
No. 3	380.57	794.38
Total	\$2,666.86	\$3,155.00
Average	\$ 888.95	\$1,051.66

For the major overhaul job on the above unit, for 1944, the labor averaged \$406.21 per unit, and the material \$529.50.

Not all, but a considerable part,

of the lower maintenance cost for 1944 can be credited to steam cleaning. In the first place, the trucks in 1945 had one more year of service. General maintenance costs were lower in '43 and '44 than they were in 1945. And 1946, month by month, is running below 1945 in maintenance costs.

But we do believe—and the point I want to bring out—is that a substantial part of the 1945 maintenance cost increase was due to the fact that we did not do pre-steam cleaning during the major part of the year.

Heavy Equipment Savings

I should like to be able to give comparative labor and material costs on big equipment overhauls, both with and without steam cleaning. We are convinced that pre-steam cleaning is more important here than with the truck units. However, the parts' replacement costs are the big factor, and these vary so much with each different overhaul, that no set of figures would prove the point fairly.

The last shovel-dragline which was given a complete major overhaul was a 2-yd. 44-B Bucyrus-Erie. On this shovel the labor ran \$2,775. and parts and materials,



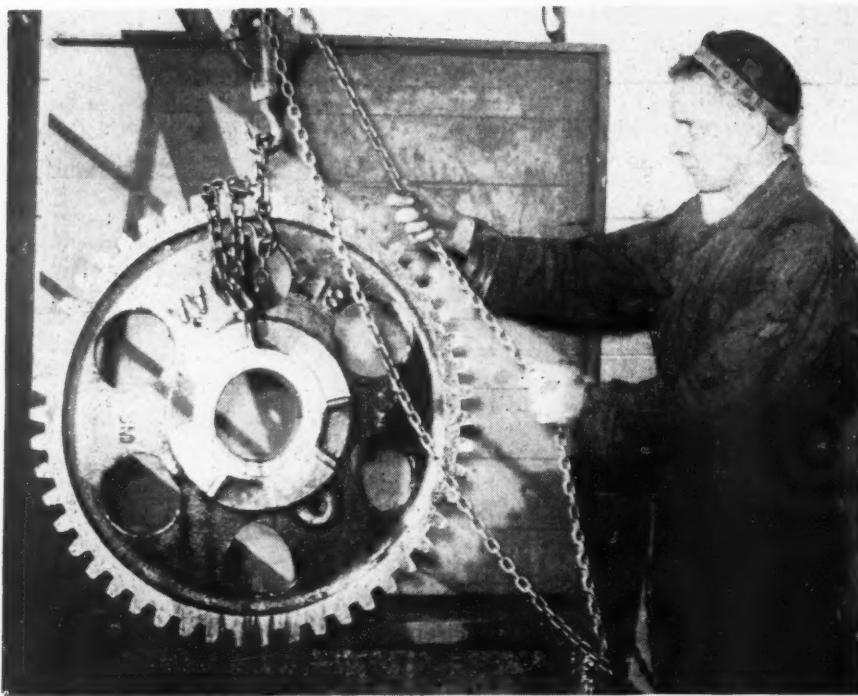
GENERAL MANAGER of C & F Company is L. M. SHERIDAN. He is also president of Montana State Contractor's Association.

\$11,019.57. On the job before that, a 1½-yd. Koehring 603-K shovel, the labor was almost twice that for the 2-yd., and material costs ran \$5,720.11.

Both of these jobs were given



FOR STEAM CLEANING. water is directly connected to cleaning unit under city pressure and is continuously converted into steam. Same amount of time is required for cleaning 8-yd. semi-trailer dump truck or 2-yd. shovel.



PARTS ARE GIVEN 24-hr. bath in cold solution tank in conjunction with steam cleaning. An overhead crane handles parts into solution. After bath, items hang and drain back into tank for 1 hr. Here propelling gear from 2-*yd.* shovel is being lowered into cold solution tank.

complete steam cleaning at a cost of not over \$25 per shovel.

After the equipment has been completely steam cleaned and torn down, we use a cold solution tank for cleaning motors, transmissions, rear-end parts, gears, and similar parts and pieces of equipment. The vat-type tank was made in our own tin shop. It is located in one corner of the washrack room, and an overhead hand crane handles the parts into the solution.

We use a motor cleaning cold solution, costing \$1.85 per gal., and 100 to 110 gal. will last one year.

Parts to be cleaned are lowered into the solution and left for 24 hr. They are then raised and allowed to drain back into the tank for 1 hr. After draining they are washed on the rack floor with a 160-deg. hot pressure hose, and finally dried with an air hose.

The same solution is used for cleaning wire rope. When a shovel is torn down, each rope is removed and inspected. If its condition warrants a return to the machine after the major overhaul, the rope is cleaned, allowed to dry, given a hot bath lubrication, and stored on a reel until the shovel is ready to return to service.

We use in our operations some 25,000 ft. of wire rope per year.

During the war we used whatever type was available, but now we use only preformed wire rope, which best suits our needs. By comparison, we have found that preformed rope outlasts non-preformed by a considerable margin, and also, it is much the safer rope



STEAM CLEANING prior to major overhaul cuts paint cost. Every piece of equipment gets factory paint job before being returned to service. Here, ED BYE, paint shop foreman, puts finishing touches to 7-*yd.* GMC dump truck. Average 1½-*yd.* shovel repaint job without steam cleaning runs \$110, with steam cleaning, \$77.

to handle. In overhaul jobs, we find where preformed rope has been used exclusively, less sheave groove rebuilding is required and less repair necessary to the lagging on the drum.

In building up worn sheave grooves we use an 85 Lincoln rod, electric welding, then machine the groove back to its original depth and diameter. On a 2½-ft.-diameter sheave, this repair runs an average of \$27, which is a considerable saving over replacement cost. The same method, with the No. 85 rod, is used for resurfacing drums where the lagging is worn.

Steam Cleaning Cuts Paint Cost

Every piece of equipment overhauled is given a complete factory paint job before being returned to service. We have found that steam cleaning cuts painting costs from 25 to 40 percent. Two shovel repaint jobs, without steam cleaning, cost \$110 each. Paint jobs on two similar shovels which had been given steam cleaning averaged \$77.

The following is the breakdown on three recent shovel repaint jobs, averaged as to labor, tax, paint, masking and sandpapering:

Labor (16 hr. at \$2.35)	\$37.60
Tax	3.70
Paint	22.00
Masking & Sandpapering	
(labor)	10.56
Average per shovel	\$73.86

All the above shovels were given pre-steam cleaning before the major overhaul job, and then a factory repaint job.

Our main maintenance and repair shop problem is to keep all of our units in active operation with the least possible number of idle hours. We are convinced that by using complete pre-steam cleaning of all units before major overhaul jobs we are substantially cutting layup time and overhaul costs.

LEGAL ADVENTURES

of TRACTOR CONN



By LESLIE JOBB

No contractor ever tries to be his own dentist or his own shoemaker. It is even more dangerous for him to be his own lawyer. There are, however, some legal rules which every contractor should know, and these rules may be explained in plain English without resorting to the jargon of the law, unintelligible to most laymen.

This series of articles, dealing with the Legal Adventures of Tractor Conn, a typical contractor anywhere in the United States, explains some of these legal points in plain language for the contractor. Each one is based on an actual decision of an American Court.

The Case of the Surety Bond



The subcontractor had taken a state highway job, and was interviewing the manager of the Elko Supply Co.

"I'll need about \$50,000 worth of cement and material on the ground right away and I'll have to have credit until the fortnightly

payments from the state begin to come in," the subcontractor declared. "Here's my copy of the contract signed by me and Tractor Conn as surety. He has the main contract and I'm working under him."

"I notice that according to clause 7 of this contract the state holds back 25 percent of the contract price until the work is finally completed to secure the state against claims for labor or material furnished to you and that when everything is adjusted the percentage is to be turned over to you," the manager suggested. "Now, I'll tell you what we'll do. You give us an order on the state for the 25 percent, which they retain, to be paid to us whenever you would be entitled to it under the contract, as security for your supplies and you can start ordering this morning."

The subcontractor promptly agreed. Three months later he fell down. Tractor Conn, who had to pay about \$50,000 for labor and supplies on the subcon-

tractor's job in order to get a release from the state, found that the state was holding about \$55,000 on the subcontractor's account. He demanded the money and so did the supply company. Both parties went to court and the Oregon Supreme Court ruled in favor of Tractor Conn.

"The reserved fund is as much for the indemnity of Conn as it is for the security of the State for whom the work is to be performed and an equity in such reserved fund is raised in behalf of Conn," said the Court, though, of course, other State Courts might lay down a different rule.

The Case of the Disputed "Consideration"

When Tractor Conn agrees to erect a building for an owner and the owner agrees to pay \$20,000 for the completed building, the contract is binding in law, as Conn's promise is a legal "consideration" for the owner's promise, and vice versa.



On the other hand, if, after the contract is signed, the owner says to Conn, "You're a good fellow and I'll pay you \$1,000 extra," Conn cannot collect the \$1,000, as it was a bare promise without any legal "consideration" to support it.

The facts were more complicated, however, in the case of Whitehouse vs Green, reported in 81 Pennsylvania Supreme Court Reports, 386, where the evidence showed that Tractor Conn agreed with an owner to erect a certain building and Roe contracted with Conn to do the brick work. When the work was about half finished the bricklayers exercised their constitutional and hereditary rights by going on a strike.

"I've got to have the building done on time, so if you'll pay the bricklayers the increased wages which they demand and go on with the work I'll pay you \$350 in addition to your contract price with Conn," the owner told Roe, who settled with the bricklayers and finished the work on time. Then the owner refused to pay the extra \$350 or any part thereof.

"You had already agreed to do the work for a certain price, you took the risk of a strike, and there was no consideration for my promise to pay you anything extra," the owner contended.

The Court, however, ruled in Roe's favor.

"As Roe was not bound to do any work for the owner, but only to perform his subcontract with Tractor Conn, there was consideration for Roe's agreement to pay the increased wages and start the bricklaying immediately, something he was not bound to do for Tractor Conn," was the ruling of the Court.

**More Legal Adventures of
Tractor Conn Next Month**

Pipe Scaffold Gantry Carries



BRIDGE CRANE, supported on pipe scaffolding framework, lifts carved stone delivered to Manhattan's St. Patrick's Cathedral. Rig has 2-ton electric hoist and powered trolley operated from sidewalk construction-bridge.

Traveling Crane

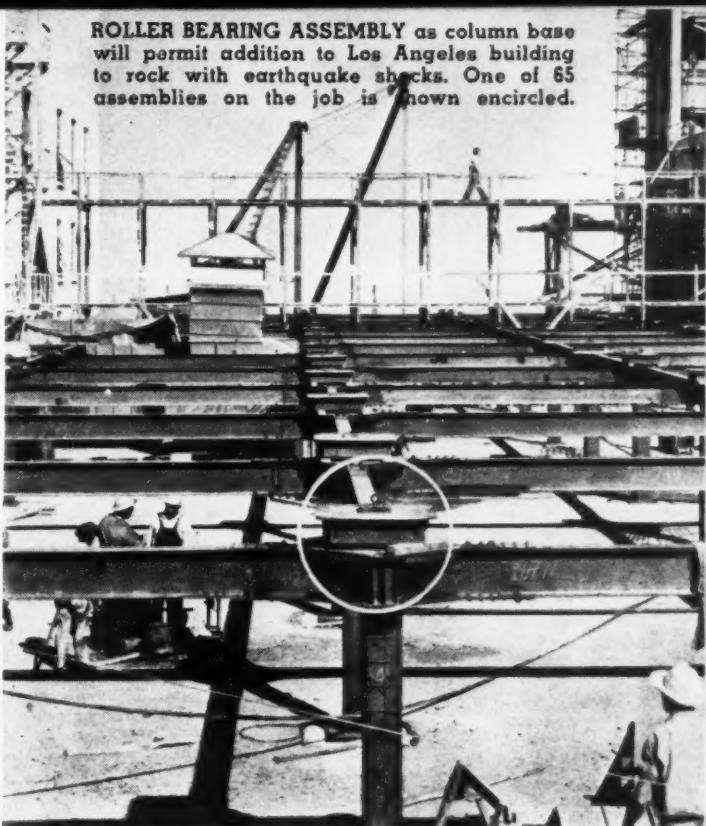
A NOVEL GANTRY FRAME, made of tubular steel scaffolding, supports an overhead bridge crane that speeds movement of materials for the renovation of St. Patrick's Cathedral in New York. Devised by the George A. Fuller Co. of New York, general contractors for the work, the craneway consists of two 6-ft. wide bents framed of standard Chesebro-Whitman 2- and 2½-in. scaffolding pipes in 6-ft. square panels. A 15½-ft. clear opening between bents extends from the level of the sidewalk construction-bridge to that of light bracing trusses over the crane trolley which is 83 ft. above the sidewalk. Cable guys of 5/8-in. wire rope furnish lateral stability and also hold the inner end of the craneway against the building. The overhead crane replaces a stiffleg derrick, mounted on high legs and braced with scaffolding, used earlier on the job.

Carved stone and masonry materials are lifted from delivering trucks by a 2-ton electric overhead hoist suspended from a monorail on an electrically powered trolley that carries them back 78 ft. to the building face for placement. Trolley and hoist are operated from the sidewalk bridge through control cables hanging from the bridge-crane assembly. To prevent the trolley from jumping the bumpers and crashing to the street below, power to the drive motor is cut off by a safety interlock 16 ft. from the street end of the crane rails. For travel beyond this point, a deadman switch must be held closed. For the Fuller Co., T. Rome is job superintendent.

MATERIAL HANDLING TIME is reduced 30 percent by lifting and moving masonry with the new bridge crane instead of with the earlier stiffleg derrick mounted on pipe scaffolding falsework, shown below, which it replaced.



ROLLER BEARING ASSEMBLY as column base will permit addition to Los Angeles building to rock with earthquake shocks. One of 65 assemblies on the job is shown encircled.

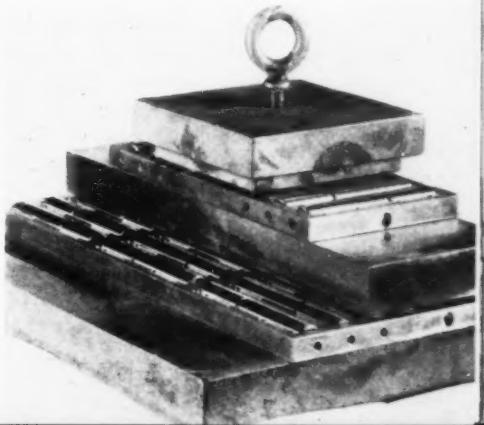


Building Can Shimmy on Roller Bearings

COLUMN BASES of roller bearings meet earthquake building code requirements for the addition of three floors to the six-story Sears, Roebuck & Co. plant in Los Angeles. The present code, enacted since the original structure was built in 1929, requires that all construction be designed to withstand horizontal stress caused by seismic disturbances. The old building will carry only the vertical load of the addition. An adjoining building built in accordance with the new code will absorb the new structure's horizontal rockings through ties at each floor.

The 65 roller bearings carrying the addition, made by The Torrington Co., South Bend, Ind., are each made up of two sets of rollers in 21-in. square frames set normal to each other. Each assembly weighs 600 lb. and is designed to support 250,000 lb. Acting together, the two sets of rollers permit movement of the column base up to 6 in. in two directions.

ROLLER SETS placed normal to each other permit column bases to move in any direction. Both sets act when movement is diagonal.



Accounting for

THIRD OF A SERIES OF SIX ARTICLES BY GUY M. CARSON,

Cash Receipts

CONTRACTORS spend a lot of money, and last month's article in this series discussed how properly to keep track of expenditures. Also, they take in a lot of money, of course not as much as they would like, and it is just as important to keep proper accounts of income as it is of expenses. This third article in the series will be devoted to Cash Receipts. The accounting procedure given here applies to both large and small contractors, for it is essential to proper conduct of any contracting business.

Accounting Personnel

If you have not yet a large enough firm to warrant an office force, you must then either keep your own books or have some member of the family keep them. Or, an excellent alternative is to have a regular bookkeeper or accountant keep your books on a part-time basis, a procedure followed by many small firms. Such a person may be employed elsewhere and do your work evenings and Saturdays, but there are also accountants who make part-time jobs a specialty. Any arrangement whereby a competent and experienced person keeps your books is worth while. We recommend it. It's not expensive, and it's a good set-up.

However, if you plan to keep books or have a member of the family do it, that's all right so long as it is done properly. It will make a business man out of some member of the family. These articles have typical entries and illustrations, and will, we hope, be instructive and helpful to the layman keeping a comprehensive set

of books. They are not, however, intended to teach the principles of bookkeeping, but to adapt a certain style of bookkeeping to the contractor's needs.

The method of keeping contractor's Cash Receipts as outlined in this article has certain advantages: It is simple, yet complete, and is easily kept in balance. It shows how much was received from contracting operations and to what jobs these receipts apply. It also shows the amount of income derived from non-contracting operations or other special income. Lastly, figures needed for determining profits and those needed for income tax are also readily available.

Best of all, you may have this information with or without a General Ledger. If you are a large operator and have a bookkeeper or accounting department, you will probably want to keep a General Ledger. But if you prefer, the totals of this Cash Receipts record may be carried forward until the end of the year. The footings at all times will tell you what your receipts have been and from what source.

Keeping Track of Income

The old-style method of keeping Cash Receipts was to enter everything in one column and then post to a lot of individual accounts. That was cumbersome, took time and was subject to errors.

The form illustrated in this article provides special columns for special types of receipts. There is one column for Accounts Receivable, which includes all moneys from regular contracting operations. Separate columns, shown as Nos. 4 and 5 on the form, are available for recording special incomes, and more similar columns can be set up if necessary. For example, on the form shown, the contractor

has been renting out some of his equipment and has recorded income from that source under the heading of Equipment Rental. Once a column is set up for special income, nothing else should be kept in that column.

In order to keep an accurate record, it is necessary to enter ALL receipts in the Cash Receipts Book and to deposit them in the bank. All disbursements should be made by check. A Petty Cash Fund should be kept for small incidents.

Distribution of Cash

In the case of receipts where a discount has been allowed, the amount received is entered in Col. 1, the discount is shown in the second column and the gross amount (the check, plus discount) goes in Cols. 3, 4, 5 or 6. Cols. 1 and 2, therefore, MUST equal Cols. 3, 4, 5 and 6.

In the third column or Accounts Receivable (remember, Accounts Receivable for our purposes are to be construed as ALL moneys collected for contracting activities) a space is provided for the Job Number, which should always be entered therein. If the amount received is not an Accounts Receivable, it should not be entered in Col. 3. If, for example, it is from the rental of equipment, Col. 4 is headed up as such and the amount entered therein; otherwise enter it in Col. 6 with explanation, as illustrated in the case of scrap sales.

If cash is borrowed from the bank, the net amount received is always entered in the first column, the amount of the note is entered in the column headed Other Receipts and the explanation from whom it was received is placed in this column. The first column Amounts Received is your debits to your bank account. Each time a bank deposit is made, add the items

Contractors... 3

COMPTROLLER, TALLMAN, ROBBINS & CO., CHICAGO, ILL.

CASH RECEIPTS

MONTH OF April.

318

DATE 1940	RECEIVED FROM	AMOUNT RECEIVED	DISCOUNT ALLOWED	ACCTS. RECEIVABLE		Equip Rental	8	OTHER RECEIPTS		MEMO BANK DEPOSITS
				JOB #	AMOUNT			EXPLANATION	AMOUNT	
Sept 10	C. B. Jones	50000.00		10	50000.00					
12	H. H. Gray & Co.	49000.00	1000.00	12	50000.00					
15	1st. N.W.L. Bk.	200000.00								
15	H. H. Salvage Co.	360								
16	C. B. Jones - Below 4c	72600.00		10	72600.00					
16	OK Exports - Touches	300.00				300.00				
17	Sub. S. S. Co. - Truck Gas	70000				70000				

in the first column. The amounts entered equal your deposit. (It may be entered as a memo in the column on the extreme right. Since this column is a memo only, it has no bearing on balancing the page).

The sheet is kept in balance at all times by adding each column and putting the totals in small pencil figures and then making sure that the total of Cols. 1 and 2 equals that of Cols. 3, 4, 5 and 6. When the bottom of the page is reached, make sure the page is in balance and forward all totals to the proper columns on the next page.

This simple procedure may be followed month after month until the end of the year, at which time the footings show your total income for the year. (The double entry bookkeeper may prefer to post these footings to the Ledger monthly.)

Typical Examples

Typical entries are shown in the accompanying illustration. As you have already noticed, in this accounting system each job or proj-

ect is given a job number. All receipts from jobs (Accounts Receivable) are keyed with that number so they may be properly entered to the credit side of the Job Record sheet keyed with this same number, which will be discussed in a subsequent article.

For example, we find that the first item is a sum of \$5,000 received from A. B. Jones. This is entered in the first column Amount Received. No discount was allowed the customer, so the same amount is entered in Col. 3 under Accounts Receivable. As this money was from Job No. 10, that fact is indicated in the column provided for that purpose.

You will notice that the second entry pertaining to Accounts Receivable is from H. H. Day & Co., which pays a bill of \$5,000 but is allowed a cash discount of \$100. Therefore, the net amount received is entered in Col. 1 (\$4,900), the \$100 cash discount is entered in Col. 2, and in Col. 3 the full amount (\$5,000) of the bill is recorded. This amount is from Job No. 12, as is shown in the Job No. column.

The third entry shown indicates

that \$20,000 was borrowed from the bank. Over at the right side of the page in Col. 6 the \$20,000 credit is entered. In the Explanation column it is shown that this was a loan on a 60-day note.

Had this been a case where a \$20,000 loan was negotiated and the discount taken off before the bank credited your account, the net amount ONLY would have been in the amount shown in Col. 1. The \$20,000 would still be entered in Col. 6 and an entry for the interest, or discount, would in that case have been made in Col. 6 by entering it in red ink or black ink with a circle around it to indicate it as a debit. (Such red ink or circled figure would be subtracted when adding the column.)

Balancing Books

These typical entries illustrate practically all types of entries pertaining to Cash Receipts. It should be kept in mind that Cols. 1 and 2 are the Debit columns and all other columns are Credit columns; that each time a debit or credit is made a corresponding credit or

debit entry must be made to balance, therefore, the totals of all the other columns (except the extreme right-hand Memo Column.) If your sheet is in balance your debits are equal to your credits.

The double entry bookkeeper or accountant may foot his books and enter the totals to his General Ledger each month. When the books are kept in simple form and no ledger maintained, the footings are balanced across and then carried forward to the top of each new page for the entire year. Thus at the end of the year your totals will reflect the total Cash Receipts for the year. The totals in Col. 3 will show the amount you have re-

ceived from your contracting business, and if you transact other business, such as rent out equipment or have other income, columns should be headed up to show you the total of such sales or income.

By all means keep an accurate record of all monies due you. Watch your collections. It's easier to collect money when due than to collect later. Insist on prompt payment of your Accounts Receivable.

Any recognized method of keeping an Accounts Receivable record is satisfactory. A simple and effective way is to keep a duplicate copy of all invoices rendered. File them alphabetically and refer to

them often. Record all partial payments on your carbon copy and when it is paid in full remove it to a Paid file.

Yes, Cash Receipts are important. Receiving the cash is probably one of the most pleasant functions of conducting a business. Keep a GOOD record of it.

★ ★ ★

EDITOR'S NOTE: The cost accounting system and forms described in this series may be obtained from Tallman, Robbins & Co., 314 W. Superior St., Chicago 10, Ill. The author, comptroller of the company, welcomes questions and comments on the subject.

THE FOURTH ARTICLE in this series will appear in the December Issue.

SCREEN BAFFLES Effective on Aftercoolers

AFTERCoolERS with simple wire screen baffles are proving most effective in shaft sinking and tunneling operations for the new Philadelphia Electric Co. cable tunnel under Schuylkill River in Philadelphia. The aftercoolers, one at the compressor plant at each shaft on opposite sides of the river,

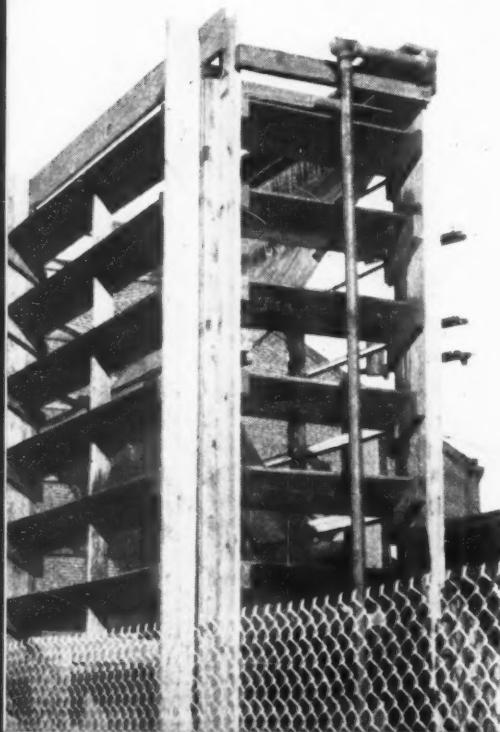
are open towers, 10 ft. high, mounted on 3x5-ft. steel tanks 3 ft. deep.

Hot water from the compressors is pumped to a perforated pipe at the top of the tower. Here the water spills on to the wire screen baffle, zigzagging in three courses down to the tank. From the tank the water, now aerated and cool, is pumped back into the compressors.

Each course of the baffle is set at an angle of 60 deg. with the horizontal. At the bottom of the two top courses is a batter board to force the water through the screen on to the next course below. Part of the water, of course, falls through the screen in a fine spray.

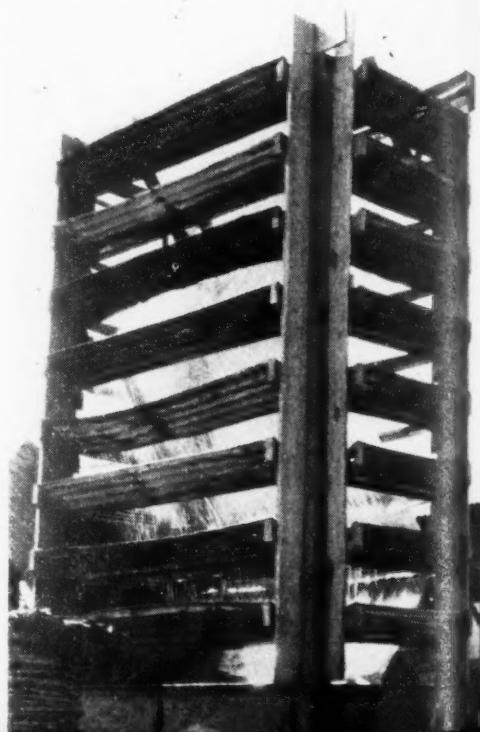
Two types of wind-protection louvres have been installed. Those of the east shaft are of wood; at the west shaft they are corrugated metal.

The aftercoolers were devised by H. C. Richardson, general superintendent on the job for Dravo Corporation, the contractor.



SCREEN BAFFLES in an open tower, protected by wooden louvres, serve as effective aftercooler for compressor plant on Philadelphia tunnel.

AT WEST SHAFT, aftercooler is similar to that across river, except for corrugated metal louvres. Note how water from compressors cascades over screen baffles, with part of flow passing through screen mesh.

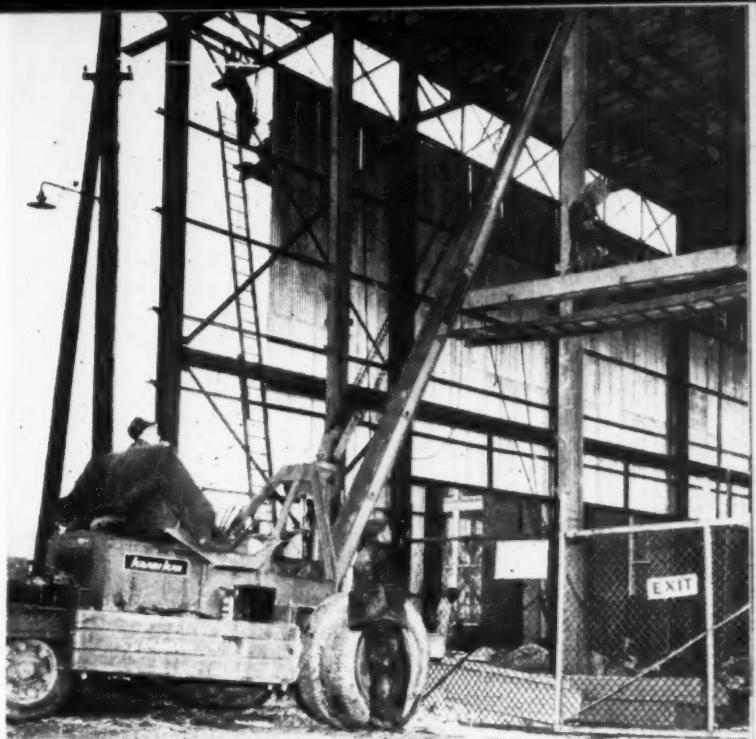


Shapes of Welded Scrap Frame Building Addition

THE QUESTION when is scrap not scrap was answered by the Richmond Engineering Co. who utilized scrap plates, left on hand after termination of its war contracts, to construct an all-welded addition to its Richmond, Va. tank-fabricating plant. All structural shapes—channels, angles, tees, and I-beams—were built up from flat plates to frame the recently completed building. The structural work was done by plant forces using scrap material and the company's welding and fabricating facilities, according to information from the Lincoln Electric Co., Cleveland.

The new building, which will be used as a warehouse, is 80x300 ft. in plan with 39 ft. clear below roof trusses. Trusses span 70 ft., with the additional 10-ft. width provided by a lean-to on one side.

Roof trusses were assembled and welded in jigs, with a planned sequence followed to reduce distortion. Chords for these trusses were continuous I- and T-sections welded of plate, while the other truss members were built-up welded angles. Columns were made from plate by fillet and plug welds; and bracing, eave trusses, struts and purlins were welded channels and angles.

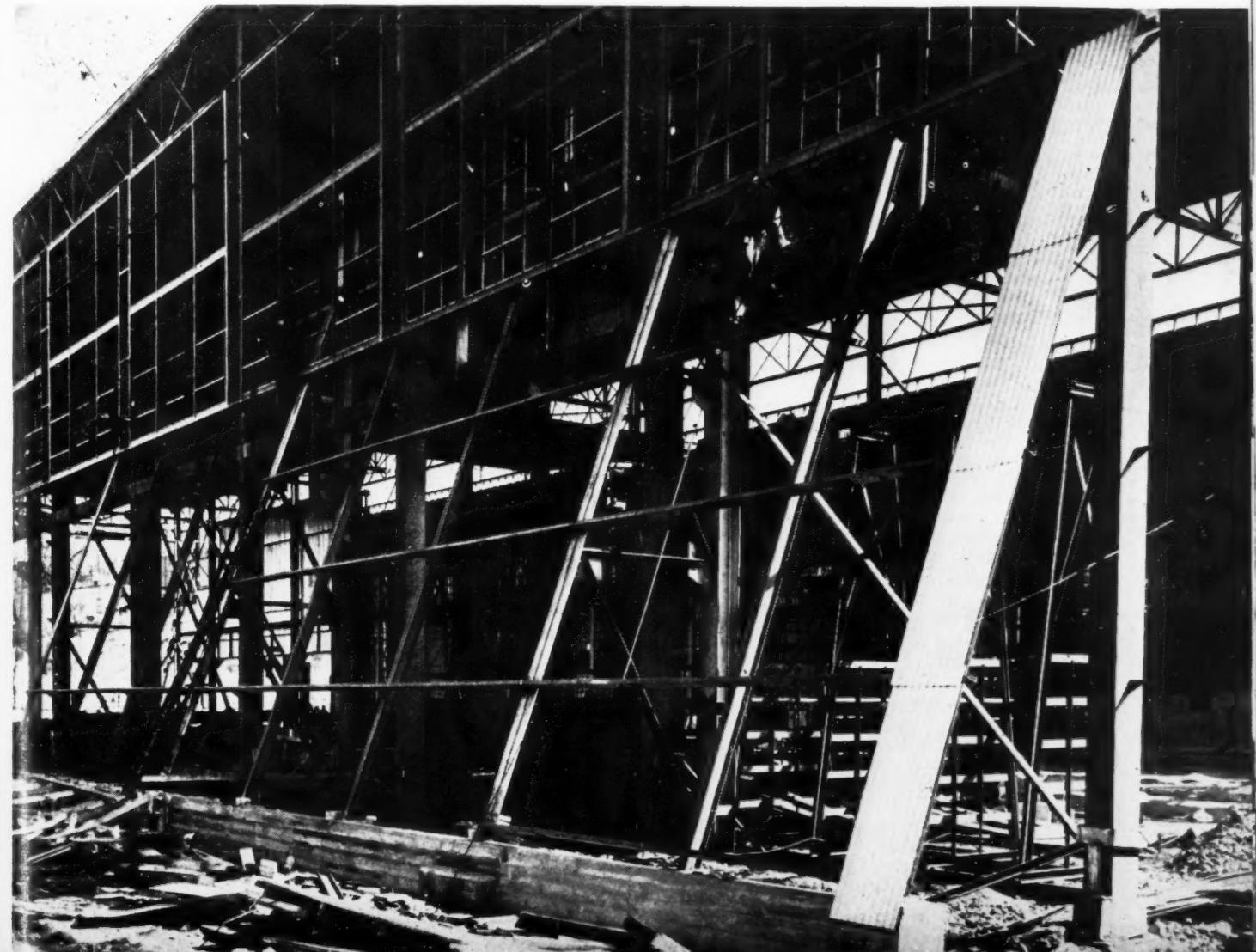


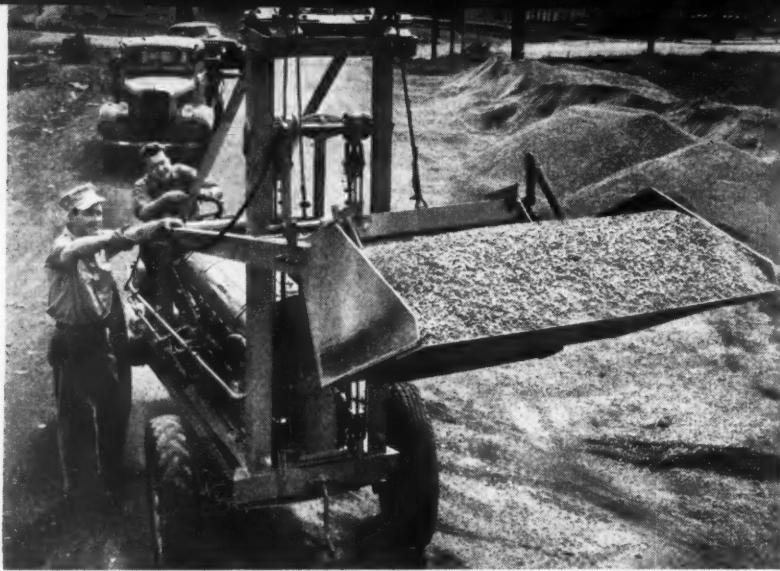
WELDED STRUT is lifted to place in plant addition for Richmond Engineering Co. All structural framing is welded-up from scrap plate, and is fabricated and erected by owner's forces.

Photos Courtesy Lincoln Electric Co.

Page 105

CRANEWAY BRACING (below) is covered to form lean-to. Warehouse is finished with corrugated, galvanized siding and has tar and gravel over built-up roof on wood sheathing.





HOME-MADE TRACTOR SCOOP loads crushed slag for street repair and resurfacing at Cuyahoga Falls, Ohio. GAIL ROGERS, city employee, built rig out of materials salvaged from municipal garage when street department officials could not obtain ready-built loader, for reported cost of \$150. Here Rogers (standing) shows operator ROBERT SWARTZ how to run machine, which is simply a scoop mounted on light farm tractor, powered by reclaimed dump truck hydraulic hoist rigged to scoop lift through cable lines.



FORM for 16-in. concrete runway pavement at Barksdale Field, La., was made up of 9-in. regular road form set on top of 8x10-in. timber stringers. Assembly was held in place by conventional steel form pins driven into subgrade through holes drilled in stringers. Forms for 11-in. slab were similar assembly on 2-in. plank. Austin Road Co., Dallas, Tex., was contractor for U.S. Engineers.



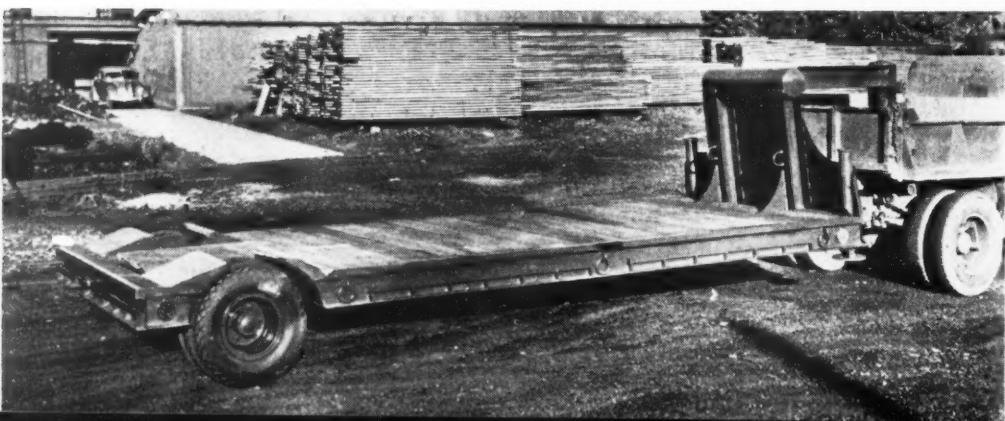
ASSEMBLY-LINE TECHNIQUES are used by railroad crew operating pneumatic hammer which sink spikes into hardwood ties as fast as men can walk. This crew is one many relaying 350 mi. of rail for Union Pacific railroad.

Press Assn. P.

SPECIAL SUSPENSION YOKE on welded trailer, arranged for easy mounting in bed any standard dump-truck body, eliminates need of tractor to haul trailer and permits maximum maneuverability of outfit. Unit, designed by Mead Machine & Iron Works

Warren, Pa., has capacity of 11 tons, 30 ft. long and weighs 7,745 lb. Main members are 8x8-in. H-beams, cut members are 8-in. channels. Skid bars are welded to top section, sides and rear with bull rings welded to frame at convenient positions for securing loads.

Lincoln Electric Co.



HOW
They Did It

CONSTRUCTION DETAILS

For
Superintendents and Foremen

TO
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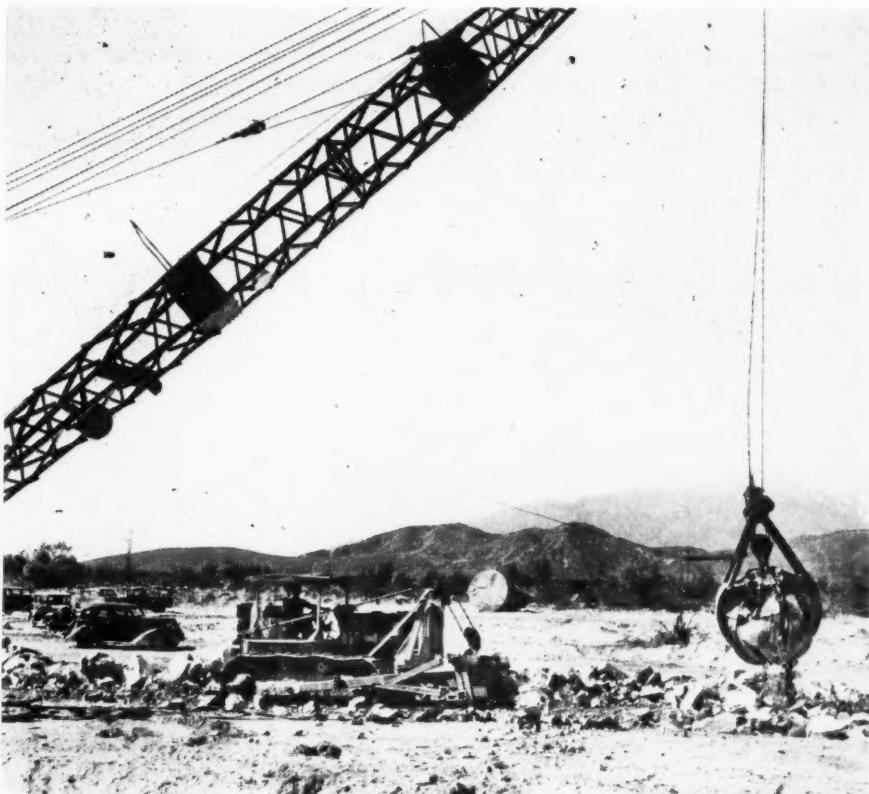


STEEL TIES, instead of conventional wood, are used for hurry-up spur track over asphalt-paved area at Kaiser Shipyard No. 3, Richmond, Calif. Welders were called on to lay tracks.



LIGHT STEEL TRUSSES to carry 120-ft. span roof over bowling alley in Saginaw, Mich., were too flimsy to erect in one piece with-

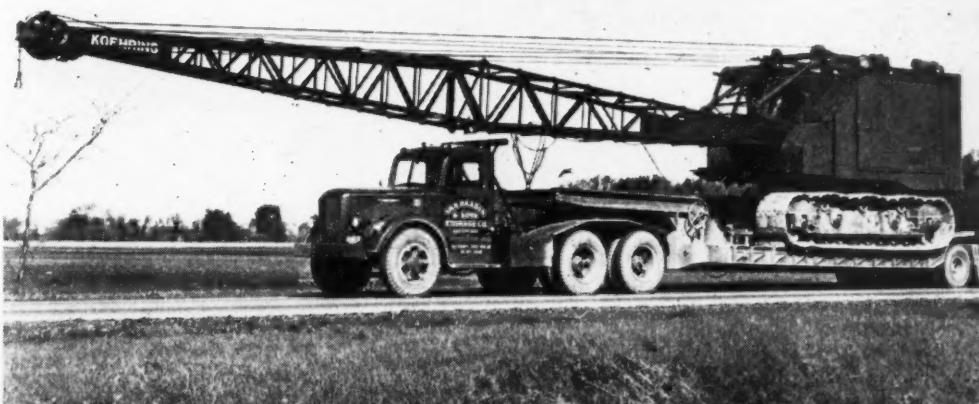
out temporary reinforcing. Contractor, McNally-Davis of Saginaw, found that telephone pole lashed to bottom chord stiffened trusses so they could be hoisted intact with firm's Bay City crane.

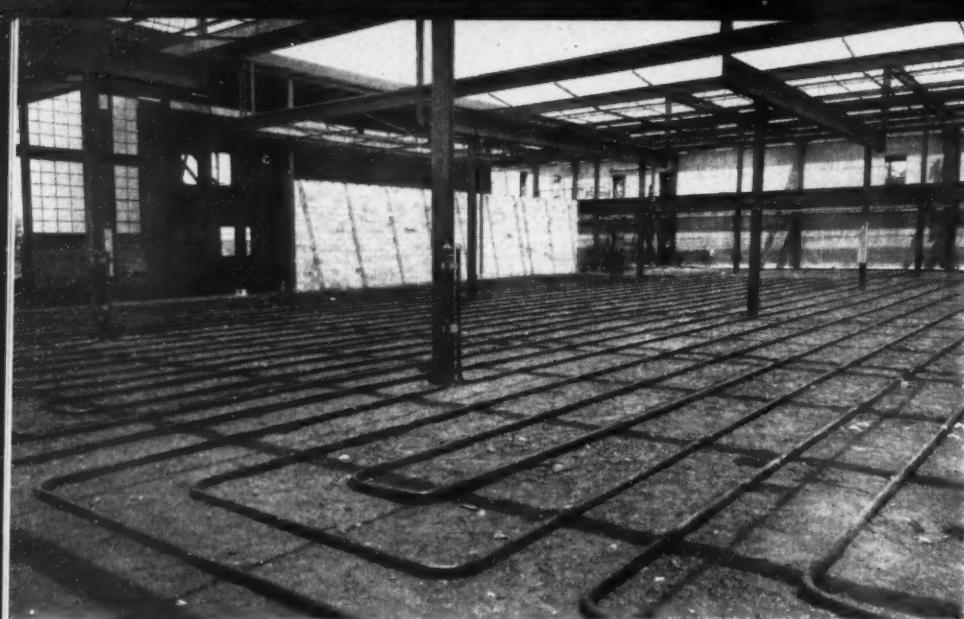


ROCK-RAKE on Caterpillar diesel D8 tractor piles up rock for handling with orange peel bucket for dike facing on Lytle Creek flood control project in California. Contractors are Winston Bros.—A. S. Vinnell—Utah Construction Co., of San Bernardino.

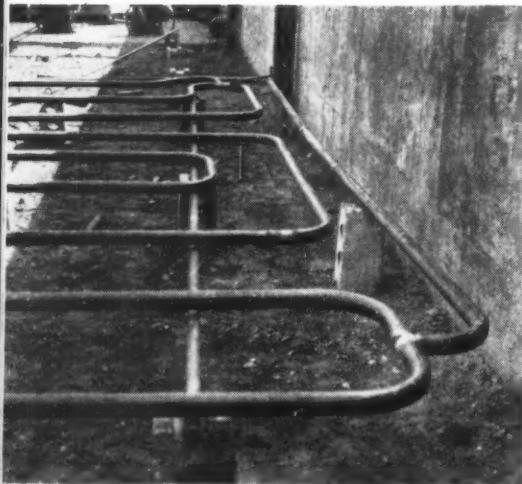


TO TRANSPORT 46-ton Koehring dragline, P. Van Haaren & Sons Storage Co., Inc., of Bay City, Mich., combines bogie-equipped Mack six-wheeled tractor and Rogers carryall. Tractor is powered by Cummins diesel engine.





CONTINUOUS COILS for radiant heating systems are of 2-in. wrought-iron pipe on 36-in. centers. Risers in each half-bay will be connected to individual volume water heaters.



COMBINATION GRID AND COIL has loop systems connected by 2-in. header to reduce resistance to flow and to permit future changes in floor arrangement.

40 MILES OF RADIANT PIPING

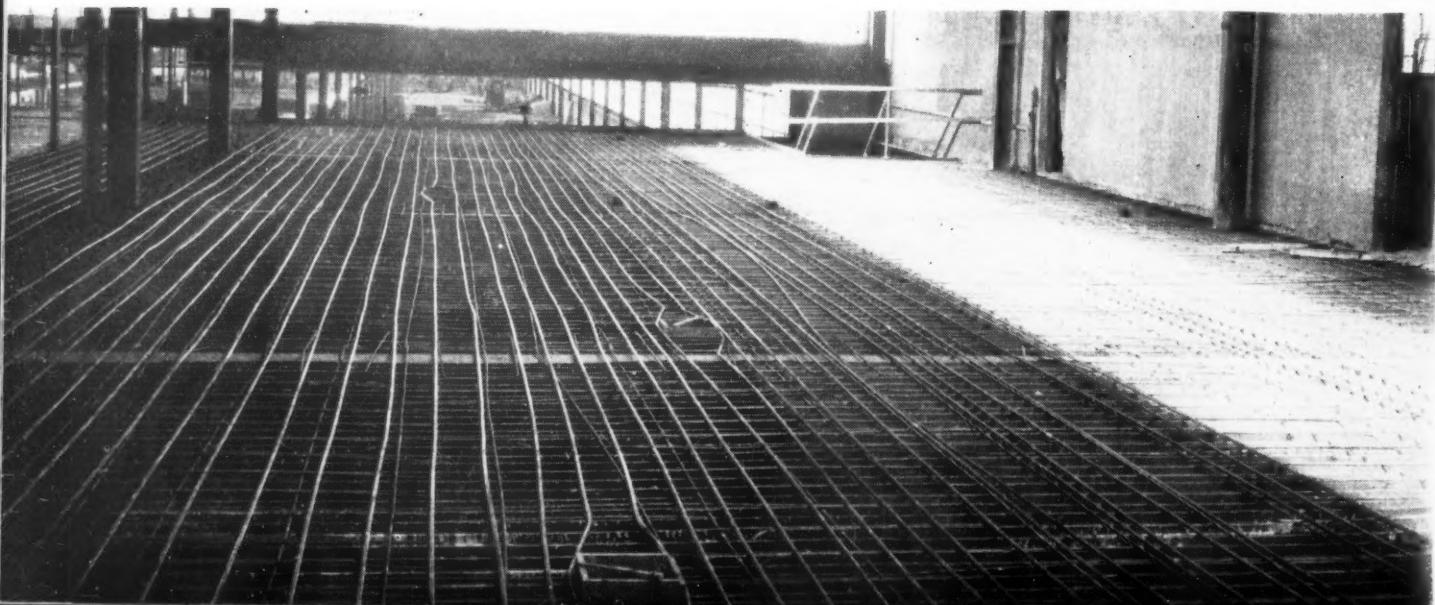
A RADIANT HEATING SYSTEM, involving 120 separate heaters circulating 180,000 gal. of water per hr. through 40 mi. of pipe, was recently installed in the A. O. Smith Corp.'s new plant at Kankakee, Ill., where 250,000 domestic storage water heaters will be manufactured yearly. Believed to be the largest such installation on record, the system utilizes wrought iron, steel and copper pipes of various sizes in grids and coils and

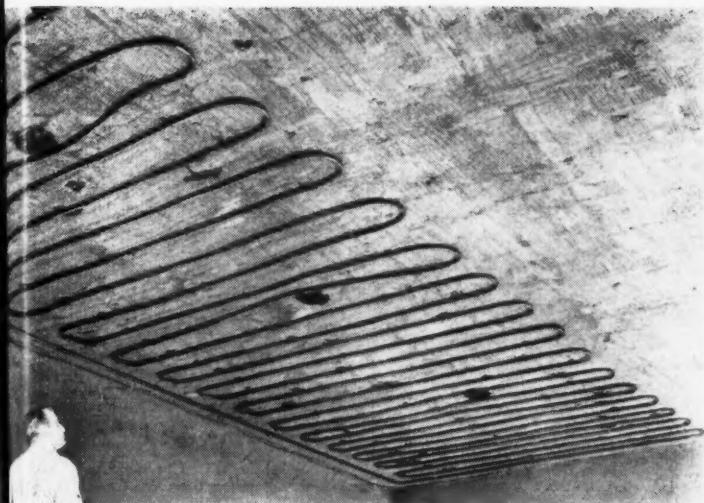
combinations of the two. Use of the different materials and types of construction was dictated by difficulties in obtaining pipe, as well as by a desire to compare the efficiencies of the various radiant heating installations.

The plant building, covering 415,000 sq. ft. of floor space, is one-story construction with the exception of 33,000 sq. ft. of mezzanine and two-story office space. Bays are 25x315 ft., and two gas-fired Smithway-Burkay volume water heaters serve a bay, each heater being connected to radiant heating panels covering half of the area. Great heating flexibility is achieved through the use of what are, in reality, 120 small heating

systems. Water at a maximum temperature of 140 deg. circulates through the systems to maintain a temperature of 85 deg. at the slab surface and an air temperature of 65 deg. Four heaters prevent freezing of a 100,000-gal. sprinkler-water tank and an additional heater circulates warmed anti-freeze to melt snow from sidewalk slabs.

Wrought-iron pipe was embedded in the first floor slab, 80 per-





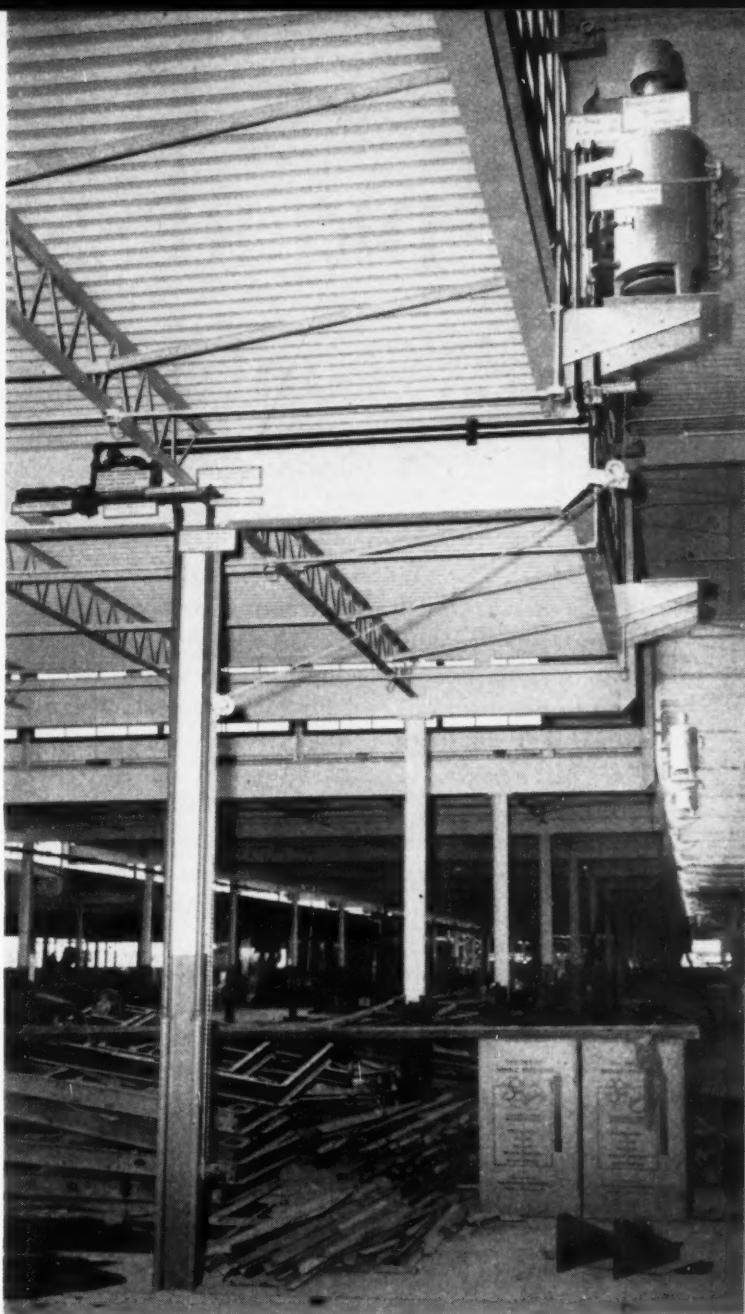
COPPER PIPE COILS are fastened to expanded metal lath of office ceiling and will be covered with plaster. Runs of $\frac{3}{8}$ -in. tubing are spaced from 4 to 10 in. on centers.

PIN MILL HEAT BIG PLANT

cent in 140x20-ft. grids with 2-in. headers and 1½-in. laterals. In some grids the headers are 140 ft. long, while in others the laterals run the long way. The balance of the first floor is heated by combination grid-and-coil panels. In one section, near a large furnace in which temperature will exceed 1,600 deg. F., a continuous coil was installed through which unheated water will be circulated to determine the rate of heat transfer through the concrete slab.

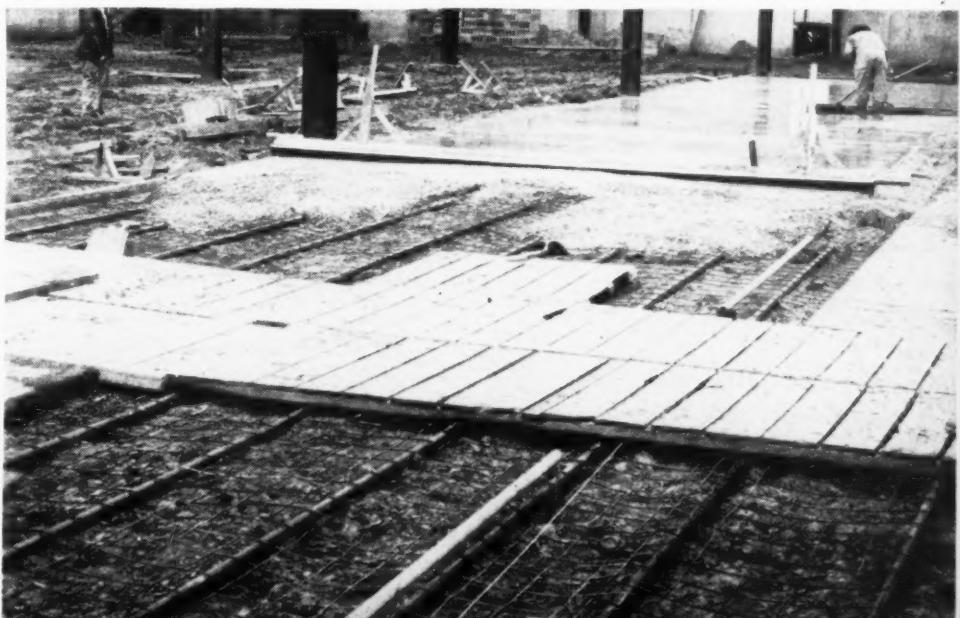
Bundy copper-coated steel tubing was placed in the mezzanine floor slab. This pipe, having an outside diameter of $\frac{5}{8}$ in. and a wall thickness of only .049 in., was installed in a grid pattern with c. to c. distances varying from 6 to 12 in. In the office section, copper coils in the second floor ceiling supplement wrought-iron pipe grids in both floor slabs. One man can service the entire system.

Designed by C. W. Colby of the A. O. Smith Corp., the radiant heating system was installed by the Colton Corp., Kankakee, Ill. J. W. Colby was heating superintendent for Colton and F. A. Carstens was project manager for A. O. Smith.



WATER IS HEATED in coils forming walls of combustion chamber in Smithway-Burkay heater fired by natural gas. Two heaters serve each 25x315-ft. bay and supply 140-deg. water to radiant heating panels embedded in concrete floor slab.

PIPING IN GRIDS (below), with c. to c. of laterals varying from 8 in. to 4 ft., is embedded in reinforced concrete slab. Advantage of grids, used in 80 percent of plant floor area, is that headers may be extended to accommodate additional construction.



DEPRESSION IN '47?

... controls can bring one

IT IS CONVENTIONAL for the American business man, who values freedom, to protest against government regulation. On this account, many people who do not know the facts in detail are inclined to discount current business protests against the post-war application of wartime economic controls. This is particularly true since in his report for the third quarter of this year, the Director of War Mobilization and Reconversion implied that business is in fine health by remarking that "business profits, after taxes, are at the highest point in history."

In complaining about government controls, however, the American business man is not crying wolf. These controls were an essential war weapon. Now, however, they are contributing decidedly to a twisting and distorting of the American economy in a degree which, if not soon corrected, may well start production and employment down the toboggan.

One general indication of how badly twisted our economic system has become is found in the wide disparities in the amounts by which different groups of prices have increased. Since 1941, for example, farm prices have advanced an average of about 125%. Industrial prices, more tightly controlled than any other group except rents, have increased only about 32%. Meanwhile, straight time hourly earnings of industrial workers have gone up about 60% and the cost of living about 43%.

The advances of individual prices within these groups have also varied enormously. Among industrial prices, that of finished steel has gone up only about 14% since 1941, while lumber has gone up over 50%. Hourly wage rates in the women's garment industry have gone up 116%, while those in the brewing industry have gone up only 33%. That share of the cost of living due to rent has gone up only 4%, while that due to the cost of clothing has gone up over 60%.

Well, What Of It?

At least four things of major importance:

1. Production, under the influence of price control, has been heavily concentrated in some

lines to the neglect of others. Result—unbalanced production, unbalanced inventories, and a serious cut in the flow of goods to consumers.

2. More or less uniform post V-J Day wage increases, promoted by the federal government, have imposed a far more serious cost problem on some industries than on others. This is particularly true of some of the most basic industries.

3. While, as a whole, "business profits, after taxes, are at the highest point in history" (due in part to a temporary excess profit tax rebate arrangement) there are enormous disparities in the profits of different industries. Some key industries are making little or no profits.

4. If not corrected, the distortion of prices, wages and production, which has resulted in such a wide disparity of profits, can contribute decisively to a major business upset.

The most striking example of the distortion of production by controls was, of course, that provided by a metropolitan meat famine at a time when beef cattle crowded the ranges. This has now been recognized. But there are many other distortions. Abundance of sports clothes, acute shortage of more essential clothing made from the same kind of cloth. Successive shortages of critically important products like baling wire and nails as the price lid on steel is jiggled first this direction and then that.

Some of these distortions of production are due to material shortages. But a major contributor is uneven application of controls, and the total removal of some while others are held firm. Among the results are bulging inventories of partially completed assemblies and shut-downs while waiting for parts.

Wage Complications

While price controls, unevenly applied, have shunted production first this way and then that, the federal government has further complicated the situation by promoting uniform wage rate increases without regard to varying capacities to pay them. The greatest single contribution to this distortion was made by the President himself. In the course of

unsuccessfully trying to mediate the dispute over steel wages last January he recommended a wage rate increase of 18½ cents an hour. Immediately that increase was accepted by organized labor as par for the first round of wage adjustments, having the sanction of the White House itself. The game then became to beat par.

But the capacity of different industries to pay wage increases varied greatly. During the war some had hiked their pay much more than others. Moreover, in some industries wages are a much larger element of total cost than in others. In 1939 (last year for which figures are available) wages ranged all the way from 2½% of total sales in cigarette manufacturing to 34.3% in hosiery manufacturing and 65.2% (for wages and salaries combined) in soft coal mining.

Under these circumstances, some industries were far less able to meet a uniform wage increase than others. Nonetheless, many of them had uniform wage increases imposed upon them. Then the price lid was held firm. This, coupled with material shortages and production difficulties which also choked output, squeezed the profit right out of those industries.

A Study In Contrasts

Some of the most important industries are making little or no profits while they bump along on a production volume which fails to meet consumer needs and prevents attainment of maximum efficiency. The automobile industry affords one conspicuous example. Another is electrical manufacturing, and rail equipment is yet a third. All of them are crucially important. Many other lines of business, of course, are extremely profitable. For example, the profits of a group of large retail stores were 150% higher during the first half of this year than they were a year ago; the profits of a group of motion picture companies were up 140%.

In the meantime, the workers in some of those low-profit industries are in no bed of roses. The increase in the cost of living since 1941 is now outstripping the increase in the hourly wage rate of workers in a number of industries, where wage rates have not risen as much as the average. On a weekly basis, a shorter work week, with less overtime, has combined with the recent upsurge in consumer prices, to place the living standards of some of these workers below the wartime level.

Such circumstances obviously create pressure in the ranks of these workers for another round of wage increases. But as long as the profit remains squeezed out of their industries wage increases, if

any, must be translated either into higher prices, or, if the government sits tight on the price lid, into losses which will discourage production and ultimately cost workers their jobs.

What To Do?

Salvation both for the workers and for employers in the relatively profitless section, a peculiarly important group of industries, must be looked for primarily by increasing productivity, thereby decreasing the cost per unit. Part of this higher productivity can come only from individual efforts of the workers themselves. Another part can come from an elimination of bottlenecks in materials and parts which prevent the labor force from working most efficiently. Only by greater output per man-hour can workers and management solve their common problem.

Until productivity has been thus increased, it is hard to think how the federal government could do a greater disservice both to labor and to industry than to repeat its performance of promoting a uniform national wage increase. With the present distortion of the national economy, some industries might again take such an advance in their stride. With many others it would raise even greater havoc.

While avoiding like the plague promotion of another uniform wage adjustment, the federal government must make it a primary objective to relieve distortions caused by the uneven application of other controls, primarily price control. Nature has given a lift to the elimination of distortions by providing bumper grain crops which should in time reduce that staggering disparity between a 125% increase in farm prices and a 32% increase in industrial prices. But that process must be speeded as a matter of conscious policy. No element of such a policy is more important than expediting the decontrol of industrial prices. Such a course is clearly essential to achieve that balance in the production of materials and parts required for maximum output.

Business and labor both want a sustained prosperity in which all will share. Sustained prosperity can be achieved only if we eliminate the distortions in wages, prices and profits which now restrain so much vital production.

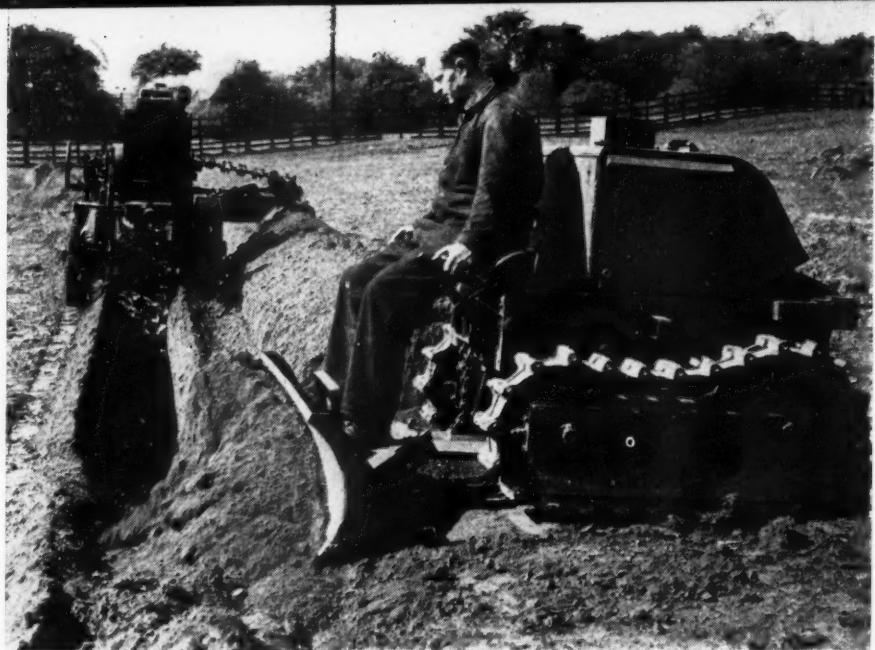


President McGraw-Hill Publishing Company, Inc.

British Develop NEW EQUIPMENT

STIMULATED BY EXPERIENCE in developing equipment of their own for military use and by enviable performance of American machines on overseas operations, the British are coming out with new and clever lines of construction equipment. Here are a few samples of new developments.

British Information Service Photos



CALFDOZER, with operator riding blade frame, backfills utility trench cut by ditching machine. Wheeled ditcher with double chain excavators makes cut 18 in. wide and up to 42 in. deep at rate of 25 to 175 ft. per hr.



DETACHABLE HOPPERS are handled by A-frame and cable rig on small pneumatic-tired tractors. Prism-shaped bin has projection to hold it upright for use as storage box, and can be used as dump hopper when supported on tractor frame.



REVERSIBLE CONTROLS and seat that pivots around steering column enable this 9-cu. yd. end-dumper to be driven in either direction with equal facility. Unit is diesel powered and has hydraulic dump mechanism.

Page 112

THREE-WHEEL DUMP UNITS of 1-cu. yd. capacity are designed to meet need for off-road transport of brick, sand, concrete and earth at building sites.



THERE'S A *Timken Rock Bit*

FOR PRACTICALLY EVERY KIND OF ROCK

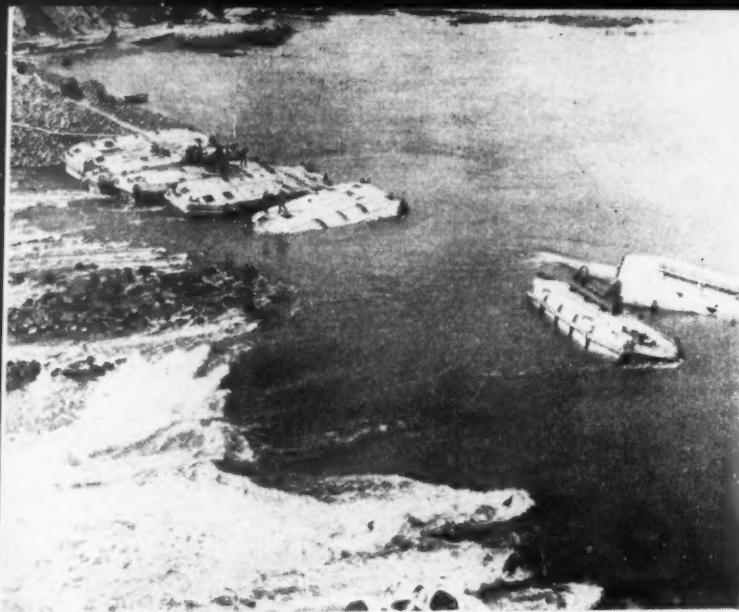


The H series: a general purpose bit for light and medium weight drills adaptable to any popular hollow drill steel section.

Introduced fourteen years ago, the Timken Rock Bit of today bears a remarkably close resemblance to those on the market in 1932. Improvements have been made—streamlined then, it's more streamlined now; heavy wing sections have become heavier—but basically it's the same design. Fourteen years' experience has confirmed its correctness.

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO

TIMKEN
TRADE MARK REG. U. S. PAT. OFF.
ROCK BITS



HOLLAND'S DIKES are being rebuilt by methods old and new. Here, earth and sand embankments are blanketed with straw and brush held in place by stone riprap, all laboriously hand placed (right), while huge concrete caissons, first used in invasion of Normandy, are sunk in place to plug breached dike on Walcheren Island (left).

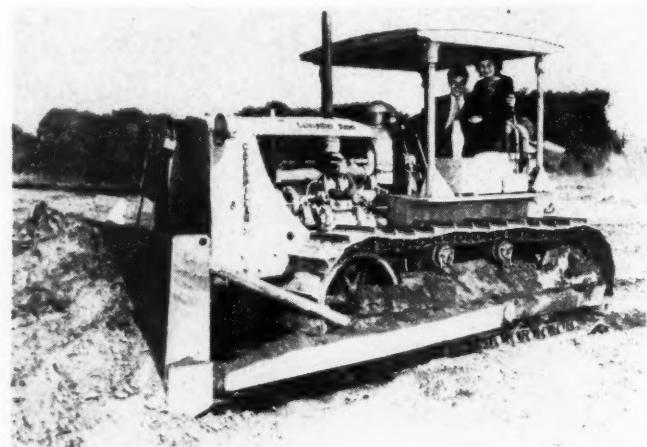
Official Netherlands Photo

Job Oddities

Page 114

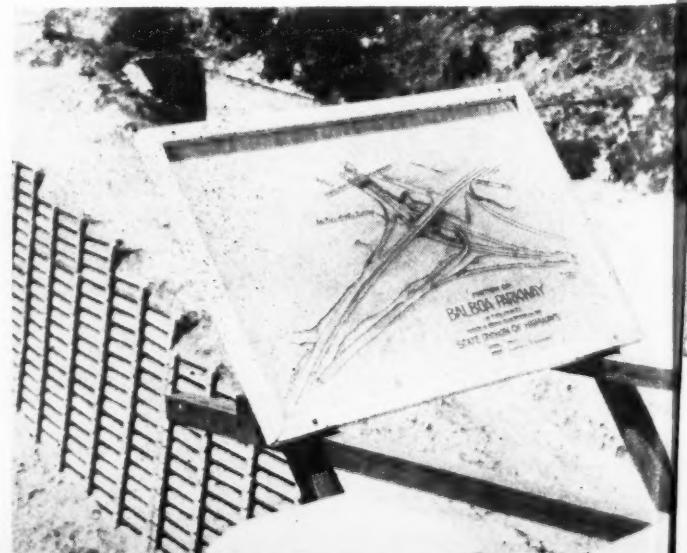
STAIRWAY LEADING NOWHERE (below) is all that's left of war-demolished building in Stalingrad. Plans call for expenditure of 600,000,000 rubles for rehabilitation of this Russian city in next two years.

Sovfoto



QUEEN OF SEABEES rides bulldozer. Chosen by group of Seabees on Guam as "girl they'd like to ride beside in bulldozer," STEPHANIE HLADIE, of Jersey City, rides Caterpillar D7 diesel tractor over rough terrain with Seabee representative ARTHUR LOGAN. Tractor is carrying Caterpillar's new 7S bulldozer blade operated by cables running to power takeoff in rear. Ride was arranged by H. O. Penn Machinery Co., of New York, and Smith Tractor & Machinery Co. of Union, N. J.

ARTIST'S CONCEPTION of portion of \$1,338,000 Balboa Freeway (below) is posted on bridge overlooking job for benefit of "sidewalk superintendents." Mittry Bros. Construction Co., of Los Angeles, is working on parkway, which will bring Pacific Coast traffic directly into heart of San Diego.



Entrained Air Makes Airport Concrete more durable



PAVEMENT made with Atlas Duraplastic air-entraining cement. Chicago Municipal Airport (formerly Douglas Airport), Park Ridge, Ill. Designed and supervised by U. S. Engineers and The Austin Company; Contractors, Standard Paving Company, White Consolidated, Inc., and Thomas McQueen Company.

Despite the traffic of war and peace... and the freezing and thawing of three tough winters...the concrete runways, taxi-ways and parking aprons of this famous airport remain highly scale-resistant.

Atlas Duraplastic air-entraining portland cement was used. Characteristically, it required less mixing water for a given slump...made the concrete more plastic, more cohesive. Segregation and bleeding were minimized... the concrete made more durable.

Duraplastic cement complies with ASTM and Federal specifications and sells at the same price as regular cement. It provides the proper amount of entrained air by intergrinding with the cement the precise amount of air-entraining material needed for satisfactory field performance.

Send for further information. Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

OFFICES: Albany, Birmingham, Boston, Chicago, Cleveland, Dayton, Des Moines, Duluth, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

CM-D 41

ATLAS DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST



"THE THEATRE GUILD ON THE AIR"—Sponsored by U. S. Steel—Sunday Evenings—ABC Network

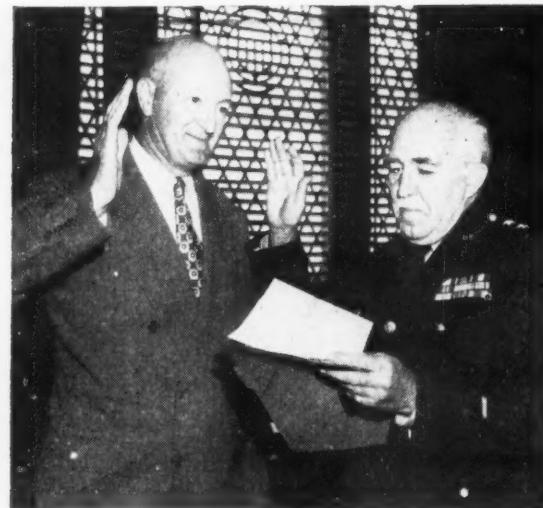
Present and Accounted For...A PAGE OF PERSONALITIES



← →
ELECTED CHAIRMAN OF BOARD of Dravo Corp., Pittsburgh, Pa., is W. K. FITCH (left) former vice-president and general manager of Machinery Division. CARL B. JANSEN (right), general manager of Contracting Division, has been elected president.



ELECTED PRESIDENT of northern California chapter of Associated General Contractors is H. EARL PARKER, Marysville general contractor.



OATH OF OFFICE as assistant administrator of Federal Works Agency is administered to JAMES W. FOLLIN (left), of Washington, D. C., by MAJ. GEN. PHILIP B. FLEMING, Federal Works Administrator. Mr. Follin has, since 1939, been managing director of The Producers' Council, Inc., and is a member of Public Works Construction Advisory Committee of F.W.A. He was formerly secretary of Philadelphia Building Chapter, Associated Pennsylvania Contractors, and has worked with Pennsylvania Department of Highways and National Institute of Public Administration of New York.



ASSOCIATED ENGINEERING SOCIETIES of St. Louis have chosen MAJ. GEN. LEIF J. SVERDRUP, of consulting engineering firm of Sverdrup & Parcel, St. Louis, Mo., as president of joint council. General Sverdrup was awarded Distinguished Service Cross for his service in Pacific.



← →
NEW PRESIDENT of Turner Construction Co. of New York, is ADMIRAL BEN MOREELL (left), who has retired from active service in Navy as Chief of Materials Division. During war he served as Chief, Bureau of Yards and Docks, and Chief of Civil Engineers. Admiral Moreell succeeds J. ARCHER TURNER (right), who has become chairman of board of company, following retirement of its founder, Henry C. Turner.



TIES

This SERRATED SADDLE never gets bald — its Points stay sharp for sure grip on the load. It is milled, rather than cast or forged, to create this benefit.

BUILT RIGHT

from
the bottom up

BLACKHAWK'S basic difference — from practical design to precision construction — makes these Hydraulic Jacks the world's most dependable and demanded jacks. From bottom up — they're built to give service way beyond their rating. Check these exclusive Blackhawk features and see why there's a difference in Hydraulic Jacks. When you need a Jack, buy Blackhawk from your Blackhawk Industrial Supply Distributor.

A Product of
BLACKHAWK MFG. CO.
Dept. J23116, Milwaukee 1, Wis.

Mister, there's a dozen more outstanding features inside to make this Blackhawk Jack rugged and dependable.

— You get LONGER PUMP LIFE because the Blackhawk pump housing is not a casting and is not a part of the base. It's a "micro-finished" non-porous cylinder bored from solid steel — easily replaced if necessary.

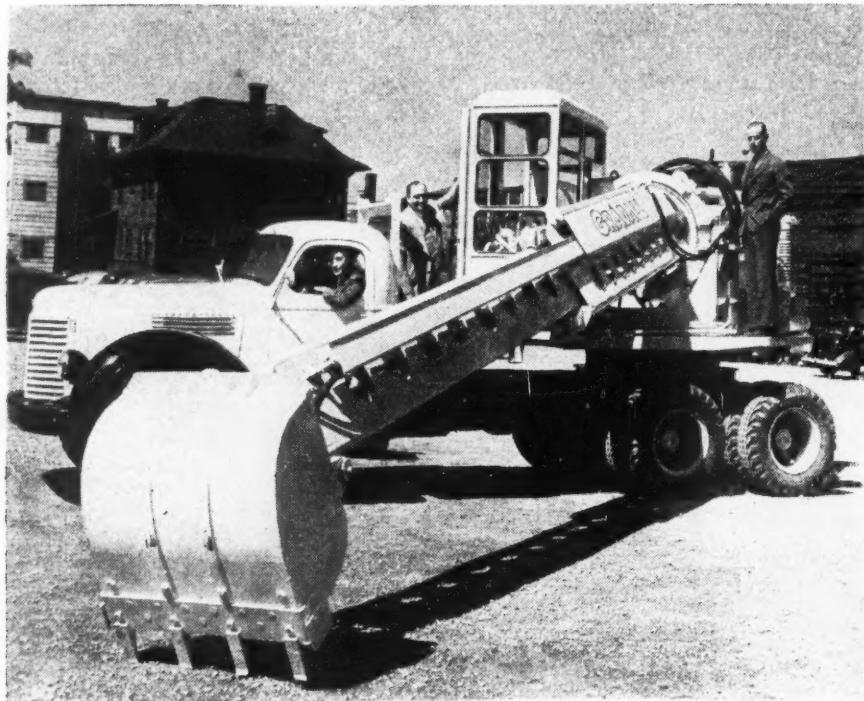
This jack slides in place fast — thanks to its SLED-TYPE BASE.

Do you know that you can also get full power and travel from a Blackhawk Jack when you work it on its side? Blackhawk's original PUMP ON SIDE feature holds the reason.

BLACKHAWK

CONSTRUCTION EQUIPMENT NEWS

NOVEMBER 1946 REVIEW
of Construction Machinery and Materials



MULTI-PURPOSE EARTH MOVER

—Entirely new in conception of earthmoving and grading equipment is truck-mounted Gradall machine, developed by Ray Ferwerda, Cleveland contractor. All-welded in construction and full hydraulic operation, rig consists of telescoping boom, operating cab, 48-hp. International gas engine drawing four hydraulic pumps, and large hydraulic fluid tank, all carried on full-revolving turntable. Boom will telescope from fixed length of 12 ft. to extended length of 24 ft., will raise 22 deg. and lower 44 deg. from horizontal position, and will rotate 45 deg. in each direction. When boom is below truck cab level, swing is limited to 270 deg. Boom attachments, which can easily be replaced in 15 min., include grader blade, ripper, and push and pull buckets for ditching, loading, excavating and snow handling of boom attachments, or by series of hydraulic pistons,

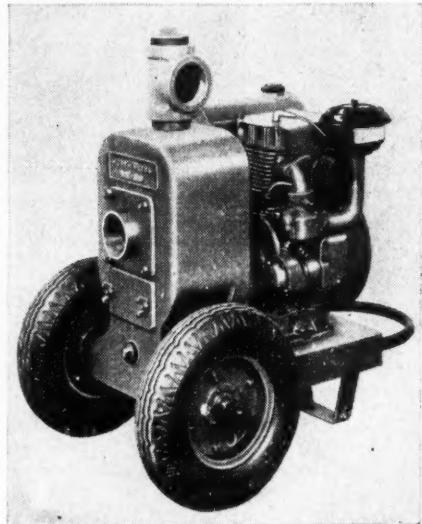
either direct acting or in connection with gears, chains or cables. Two foot pedals and three levers control all hydraulic pistons, which operate at 1,000 psi. Rig is mounted on International 6-wheel chassis.—The Warner-Swasey Co., Cleveland 3, Ohio.

ALUMINUM SHINGLES, ROOFING AND PREFAB BUILDINGS—Sheet roofing and several types of prefabricated buildings are now being manufactured from aluminum. Interlocking aluminum shingles are made from .019-gage Alcoa roofing sheet, plain or factory-painted in choice of three colors; finish is said to be exceptionally fade-resistant and durable. Aluminum roofing never requires painting, needs little if any maintenance and is excellent reflector of heat and light. All-aluminum house weighs 970 lb., packed for export. Sides and roof are .019-gage aluminum sheets with

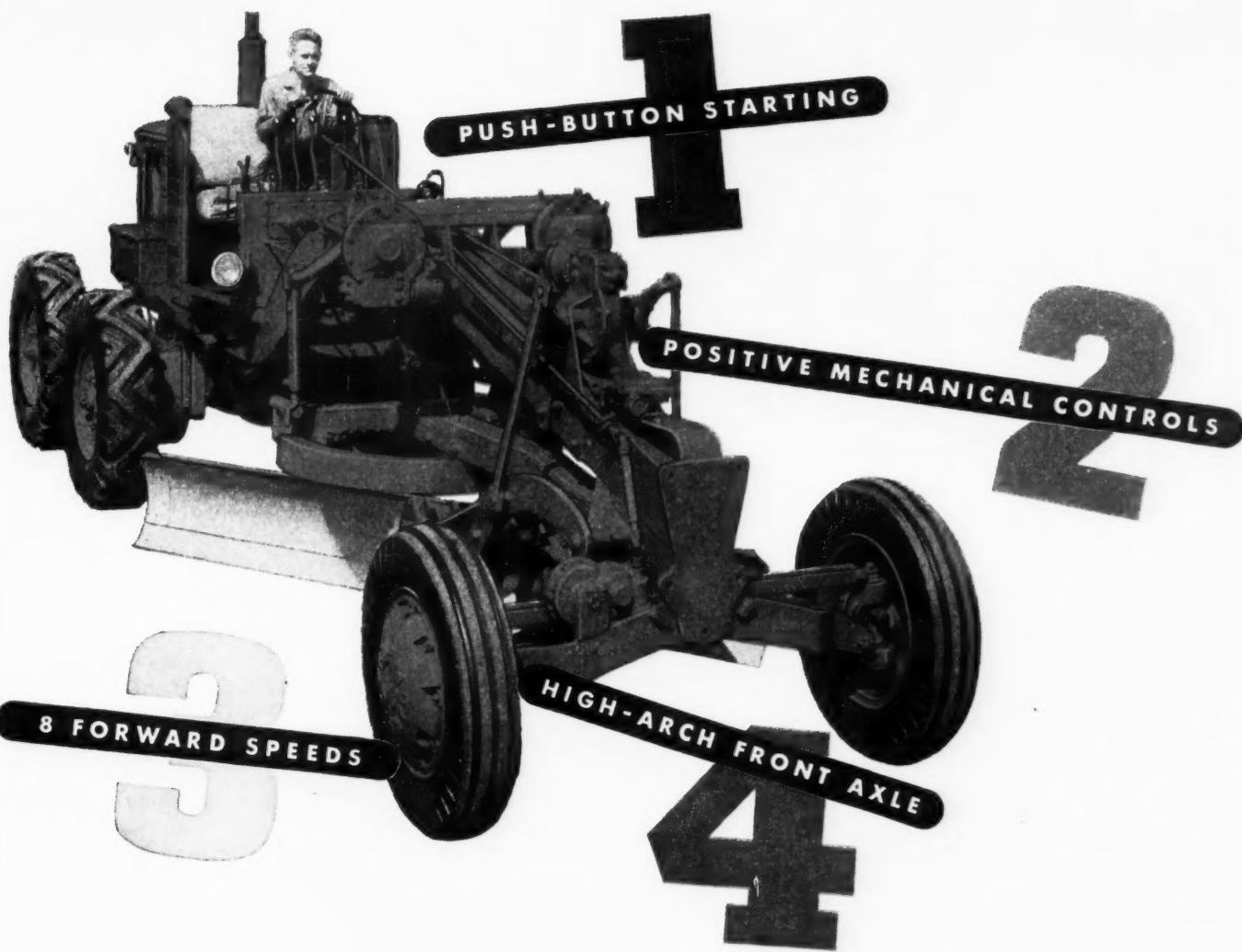
61-st. alloy wall angles. It is mounted on 3-in. concrete base. Measuring 19x9½ ft., it is divided into two rooms, with aluminum windows and doors. Sanitary aluminum latrine is available, weighing only 30 lb. packed for shipment.—Southern States Iron Roofing Co., Savannah, Ga.

MAGNESIUM LADDER—Light-weight ladder of all-welded magnesium construction weighs only 5½ lb. in 8-ft. length, while weight of 24-ft. extension ladder has been cut to 31 lb. Permanent strength, safety and rigidity are said to be additional features of these ladders. All metal construction avoids splintering and deterioration due to weather exposure. Welding of rungs into side channels assures complete freedom from loosened joints which make ladder wobbly and unsafe.—White Aircraft Corp., Palmer, Mass.

SELF-PRIMING CENTRIFUGAL PUMPS—Quick and dependable self-priming action without priming valves or "recirculation" is outstanding feature of new Blue Brute line of portable self-priming centrifugal pumps. Efficient hydraulic design has produced line of pumping units which meets standard rating tables for this type of equipment with lib-



eral factors of safety in both capacity and power. Fabricated of corrosion and abrasion resisting steel, pumps are rugged, light in weight and streamlined in appearance. All sizes except smallest (1½ in.) are regularly equipped with pneumatic-tired wheels, towing handles and lifting bales. The 1½-in. pump is base mounted with lifting handle.—Worthington Pump & Machinery Corp., Harrison, N. J.



Only Adams Offers These 4 Big Features

Only in an Adams Motor Grader will you find *all four* of these important operating features—every one of which is essential to the kind of fast, efficient, economical performance you have every right to expect in the motor grader you buy:

1. **Push-Button Starting** starts big Diesel engines quickly, easily—even in the coldest weather.
2. **Positive Mechanical Controls**—Adams highly accurate and dependable mechanical control system operates all controls at constant, uniform speed—even when two or more adjustments are being made simultaneously.

3. **8 Overlapping Forward Speeds** provide exactly the right speed for every grading operation—plus high transport speeds for fast travel from job to job.

4. **High-Arch Front Axle**—A distinctive feature that enables Adams Motor Graders to straddle and move big windrows of earth and oil mix—without bulldozing material with axle—without waste of power or loss of speed.

These are only a few of the many major advantages that make Adams your best motor grader buy. See your local Adams dealer for complete information.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, INDIANA

ADAMS
ROAD BUILDING AND
EARTH-MOVING EQUIPMENT



(Advertisement)

YOU CAN BE SURE OF CORRECT LUBRICATION OF YOUR MACHINERY



NOW
WHO'LL LUBRICATE IT?



The LUBRIPLATE Tag Service assures the machinery manufacturer, who uses LUBRIPLATE for initial lubrication, that the machines will be serviced with the same outstanding lubricant. Machine Builders, use the Tag Plan. Machine users, mail the post cards you find on the equipment.



FOR YOUR MACHINERY

No. 3 — Ideal for general oil type lubrication, ring oiled bearings, wick feeds, sight feeds and bottle oilers.

No. 8 — Because of high film strength and long life it reflects outstanding performance in most types of enclosed gears (speed reducers).

No. 107 — One of the most popular grease type products for general application by pressure gun or cups.

No. 70 — For a wide range of grease applications, especially at temperatures above 200 degrees F.

No. 130-AA — Known nationwide as the superior lubricant for open gears, heavy duty bearings, wire rope, etc.

BALL BEARING — This is the LUBRIPLATE Lubricant that has achieved wide acclaim for use in the general run of ball and roller bearings operating at speeds to 5000 RPM and temperatures up to 300 degrees F.



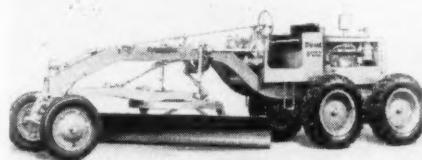
Machinery manufacturers go to great lengths in selecting lubricants that will assure the most satisfactory performance of the machines they build. Initial lubrication at the manufacturer's plant, however, will only affect the first stages of the machine's operation. Once the machine is sold or rented, subsequent lubrication will naturally influence the performance of the machine. Any excessive wear, malfunction, or frequent breakdowns of a machine, often due to faulty lubrication, will prove costly to the machine user and will reflect back on the machinery manufacturer.

Proper initial lubrication of machinery is undeniably important. But of even greater importance, especially to the machinery manufacturer, is the maintenance of original standards of lubrication in the field. To back up machinery manufacturers who use LUBRIPLATE for initial lubrication the "TAG PLAN" has been developed. It assures proper lubrication of Machines in Use. Before a machine leaves the manufacturer's plant a "tag" is attached. It fulfills three functions . . . advises proper type of LUBRIPLATE to be used . . . explains why this lubricant should be used for relubrication . . . provides postal for locating nearest LUBRIPLATE dealer.

When one of the tagged machines is delivered, the receiver and future user of the machine detaches postal from the LUBRIPLATE tag, leaving on the machine information about type of LUBRIPLATE recommended and points of application. He then mails the postal inquiry card to Fiske Brothers Refining Co. On receipt of this postal, they do two things. 1. They notify the nearest LUBRIPLATE dealer of this new machine in his territory. 2. They write to the machine user, giving him the name of his LUBRIPLATE dealer. Thus the machine user meets the LUBRIPLATE dealer and the manufacturer of the machine can rest assured of proper relubrication of the equipment.

Scores of machinery manufacturers have adopted LUBRIPLATE for the lubrication of their equipment because of LUBRIPLATE'S exceptionally high film strength, stay-put qualities, long-life, and its water, steam, and acid resisting properties. Since using LUBRIPLATE they have been able to guarantee smoother, more quiet performance, and longer life for their equipment and, therefrom are assured of valuable customer satisfaction.

MOTOR GRADER — Production of diesel No. 212 motor grader, suspended during war, has been resumed. Powered by rear-mounted, 35-brake horsepower, four-cylinder, four-cycle diesel engine, it is available in both tandem and single



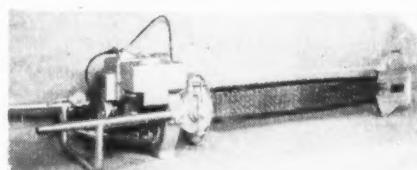
drives. Normally equipped with 10-ft. moldboard and leaning front wheels, it has traction, strength and blade positions to do complete range of blade work. Positive-acting, precision-made mechanical power controls provide fast, easy operation of all blade and scarifier movements. —Caterpillar Tractor Co., Peoria, Ill.

ALL - POSITION ELECTRODE

New improved #107 electrode is result of extensive research in extruded coatings and is very satisfactory for work involving poor fit-up on mild steel. It is recommended for single or multiple pass welding on rusty or dirty plates or sections. This low-cost electrode embraces excellent arc characteristics, working equally as well on d.c. straight or reversed polarity as on a.c. Other advantages are that electrode can be used with abnormally high welding current; has high deposition rates; permits use of "dragging technique"; has more forceful arc action, and offers high burn-off rate—Wilson Welder & Metals Co., Inc., 60 East 42nd St., New York 17, N. Y.

GAS-DRIVEN POWER CHAIN SAW

Built of latest type magnesium alloy, chain saw features cutting blade that swivels to eight different positions for easy cutting, built-in oiler on helpers' end for effective chain lubrication, gas tank cast integral with engine housing, and



heavy-duty, long-life chain. Power source is a dependable 6-hp. two-cycle Homelite engine with built-in governor and rotary valve assuring consistent performance, long life and low upkeep. Production at present is on 24-in. and 36-in. sizes weighing 90 and 95 lb. respectively.—Lombard Governor Corp., Ashland, Mass.

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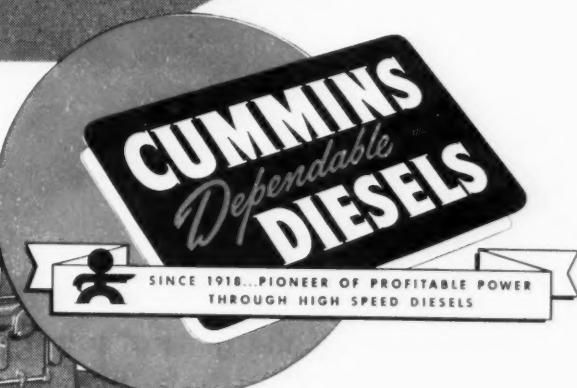
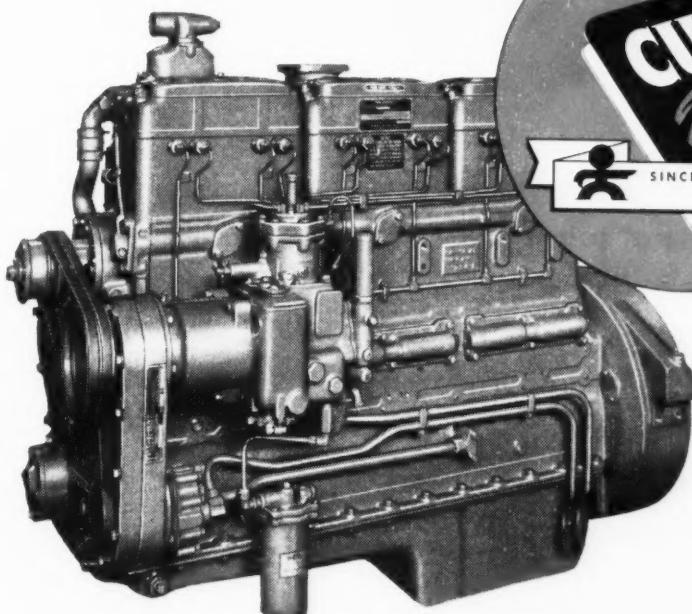
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Quality-built
by the high-speed diesel pioneer

Economical
proved on jobs such as yours

and Serviced
by Cummins specialists located near you



CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA

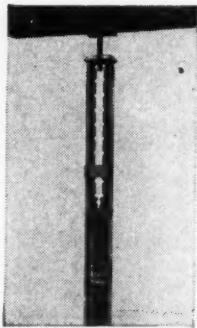
**5 YEARS
DEVELOPMENT**

**ON FIELD TESTS
IN EVERY TYPE
OF PROSPECTING
AND STRIPPING
THROUGHOUT
THE WORLD.**

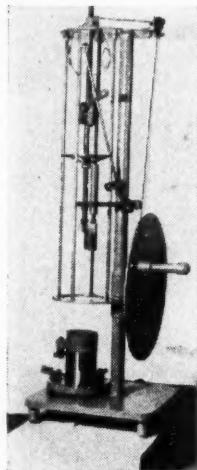


The Parmanco Single Speed Transmission Drill is designed to meet the requirements of the general prospecting field where it is not necessary to drill in solid limestone. Special sliding frame permits drilling and pulling of augers without moving drill. New design of chuck eliminates all hand operation in raising power plant. Recommended for 50 to 60 feet with four and one-half inch equipment. Under favorable conditions it is being used to greater depths.

PARIS MANUFACTURING COMPANY
PARIS, ILLINOIS



ADJUSTABLE SHORE — Two telescoping parts of Rite-Angle shore are made up of light, bar size steel angles and flat steel bands, so arranged that they may be extended to desired lengths and secured by simple throughpin. Ordinary swivel unit secured to base and threaded head unit permit turning main shaft by hand to produce plus or minus adjustments for positive fractional changes, eliminating jacking device. Entire unit is nearly 30 percent lighter in weight than other articles of this nature, with loading range from 10,000 lb. closed to 4,000 lb. fully extended. When turning shaft by hand for final adjustment, lifting power is easily attained up to 4,000 lb. Present shores are made of steel, but will soon be available in aluminum, or in combination of steel and aluminum.—Steel Forms, Inc., 207 Van Brunt St., Brooklyn 31, N. Y.



AUTOMATIC TAMPER — Designed for preparing compacted soil specimens under standard proctor test, modified proctor test, California bearing ratio test and other tests, versatile tamper has automatic features which assure uniform compaction processes regardless of operators or intervals between tests.

It automatically spaces all blows in accordance with presetting; automatically releases 5.5-lb. or 10-lb. hammer for accurate 12- or 18-in. free-falling drop, whichever has been selected; and automatically counts all blows. All settings are easily accomplished and duplicated whenever desired. Specimen molds do not rotate and are solidly clamped down to assure accurately controlled compaction. Stock hammers have 3.14 sq. in. face areas with either circular or circle-sector faces and are convertible from 10 lb. to 5.5 lb. by easily removed section. Rubber-insulated feet and other features give quiet operation. Taper bored molds that simplify specimen removal are available.—Rainhart Co., 602 W. 34th St., Austin 21, Tex.



...keeps Heil Hydraulic Bulldozers on the
job doing more Low-cost Work for You

Because Heil hydraulic Bulldozers move more dirt at less cost, they are general favorites with Oliver-Cletrac users everywhere. These contractors like the quick, accurate blade control; the full visibility; and the fast digging action made possible by the Heil hydraulic system. They know that the scientific contour of the Heil Bulldozer blade, with its reversible cutting edge, gives a bigger load-carrying capacity than you get with conventional units.

All these things result in more work done, but that isn't all. There is one more feature of tremendous importance — dependable strength. The trouble-free hydraulic system, for example, is practically leak-proof. Large diameter cylinders permit the use of low

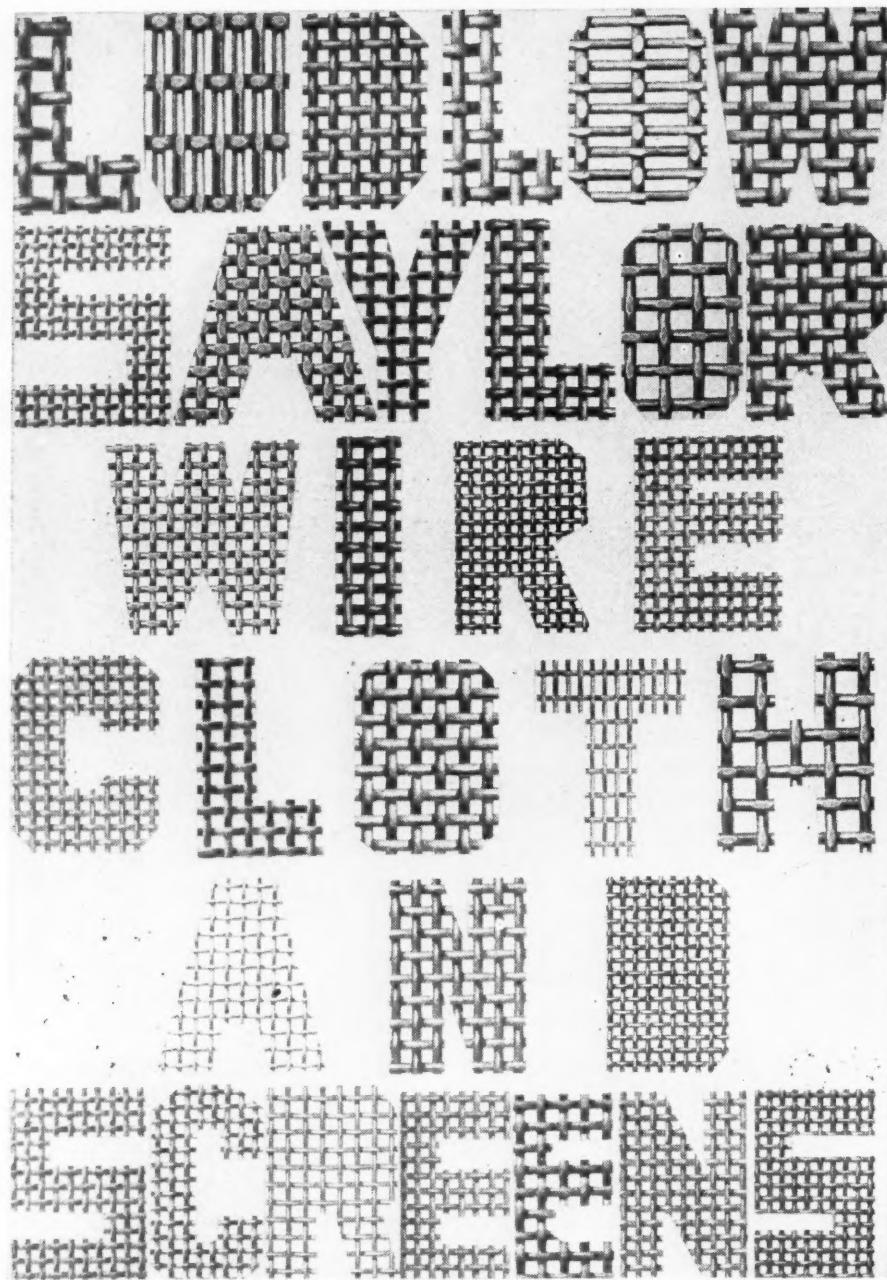
hydraulic operating pressures. Piston rods are chrome plated to prevent rusting and pitting. The tolerance between the piston and its finely honed cylinder is so close that there is seldom, if ever, any need for time-consuming piston replacement.

Heil's all-welded box-section construction provides unusual strength; there is no dead weight to slow down the work. Tailor-made for Oliver-Cletrac tractors, the Heil hydraulic Bulldozer is attached by means of sturdy connections in such a way that there is proper distribution of loads and stresses. That is why Heil hydraulic Bulldozers stay on the job — turning out low-cost work. See your nearest Oliver-Cletrac distributor for further important details.

R-83

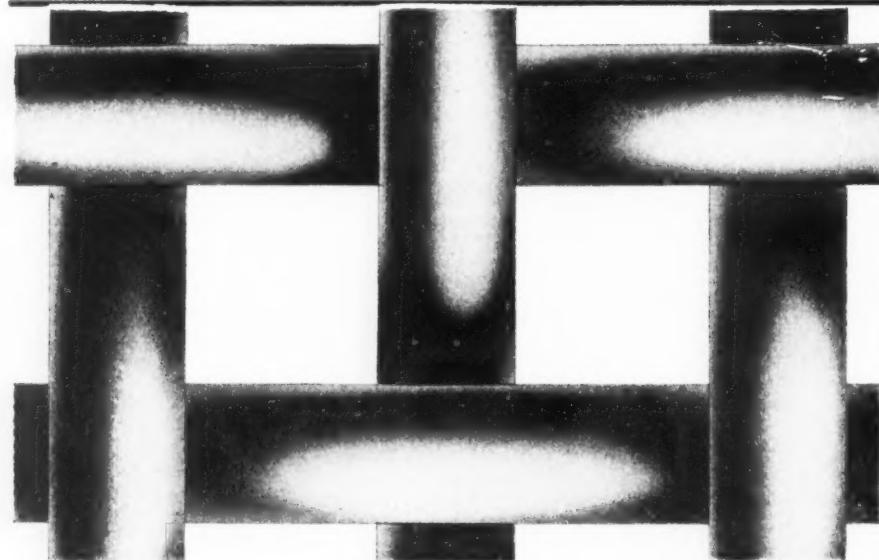
THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

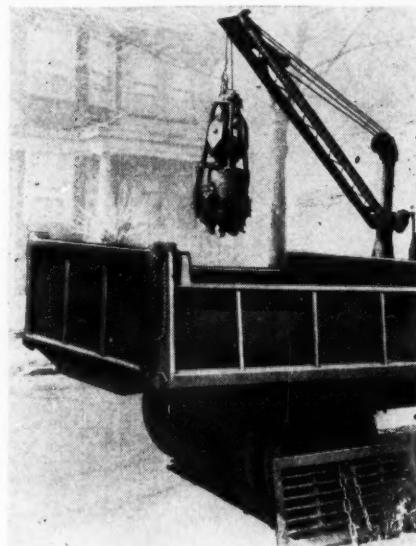


LUDLOW-SAYLOR WIRE CO.

Newstead Avenue & Wabash Railroad St. Louis 10, Mo.



CATCH BASIN CLEANER—Installed on 160-in. wheelbase truck chassis, unit takes up so little room behind cab that it can be used in conjunction with full-size dump body, thus making it possible for one truck to do complete job of cleaning out manholes and disposing of mud. Unit consists of job-boom crane, winch and Hayward 18-in. orange peel bucket. Crane will lift up to 1,500 lb. at any radius and is adjustable to radii of from 4 ft. 3 in. to 9 ft., and has swing angle



of 350 deg. Double drum winch with line pull of 1,500 lb. is controlled by single lever. Swinger mechanism is rapid reverse gear unit developed for military cranes. Swing to right and left is controlled by single foot treadle. Boom is adjusted to desired height and radius by worm-gearred, hand-powered winch. Power is furnished by engine through heavy-duty, single-speed power take-off. Unit can be used for handling water pipe, sewer pipe, gate valves, fire hydrants, nursery stock, portable welders, portable pumps, portable compressors, small concrete mixers, and other general hoisting jobs.—**Gar Wood Industries, Inc.**, Detroit 11, Mich.

PORTABLE HEATER—Self-powered heater is said to be ideal for pre-heating engines and other mechanical equipment; space heating temporary buildings, storage sheds and buildings under construction; thawing frozen areas and machinery of all types; drying and curing materials such as plaster, paint and concrete; spot heating materials, workers, machinery, storage tanks and tools; and ventilating and heating manholes, tunnels, box cars, ship holds and other confined areas. This gasoline-burning, general utility unit weighs only 312 lb. and can be easily transported from place to place by one man. Heat cutout is

(Continued on page 126)

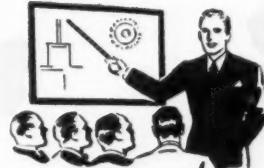
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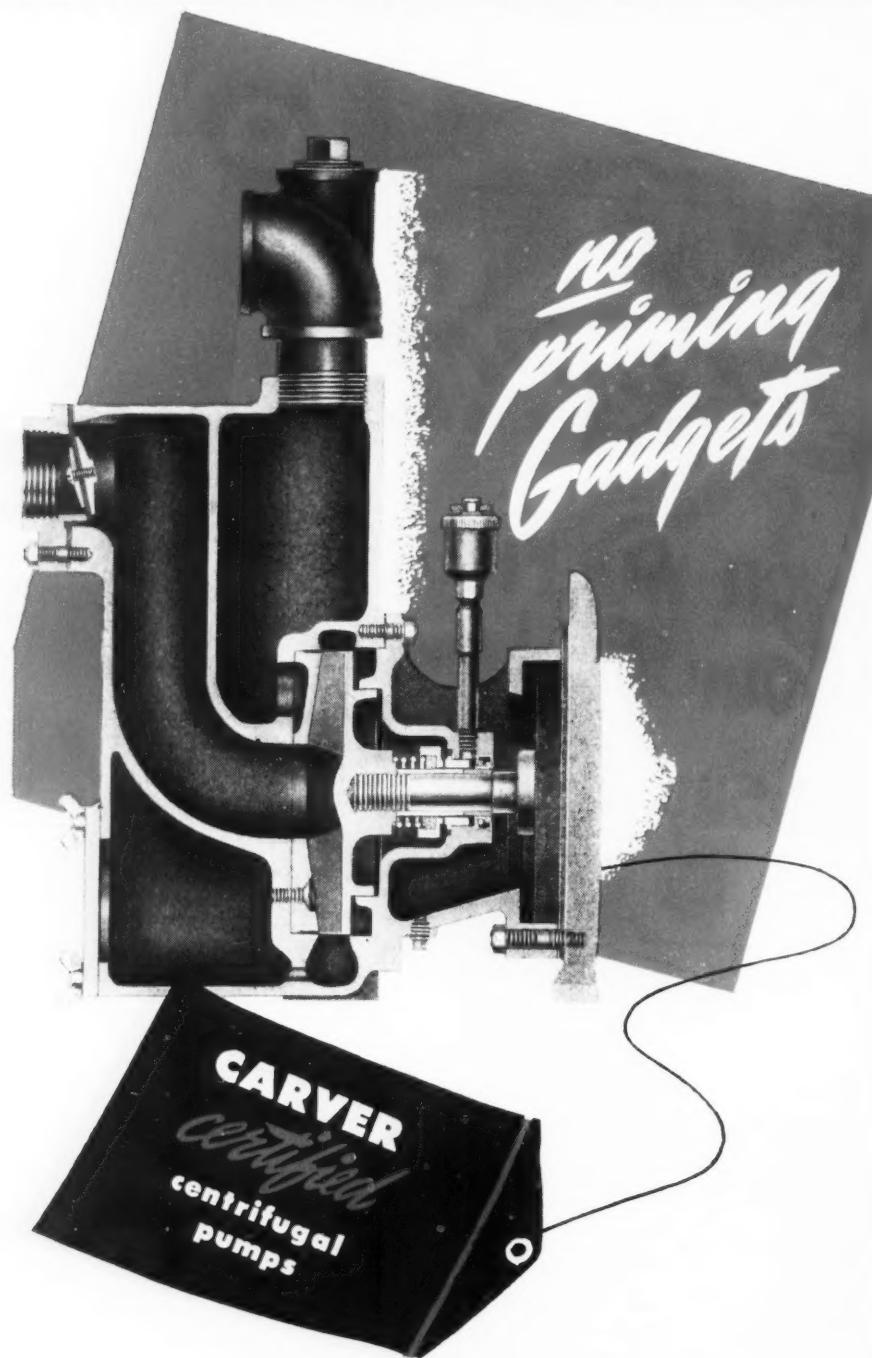
WE HELP YOUR MEN. Shell Contractor Sales Representatives will instruct your maintenance men in the proper handling of lubricants and fuels...will show them efficient, cost-saving methods based upon Shell's experience of many years' close association with construction operations.

CALL ANY SHELL OFFICE and ask to have a Shell Contractor Sales Representative get in touch with you. Shell Oil Company, Incorporated, 50 West 50th Street, New York 20, New York; or 100 Bush Street, San Francisco 6, California.



SHELL OIL COMPANY, Incorporated

HERE'S ANOTHER REASON WHY CARVER PUMPS ARE BETTER

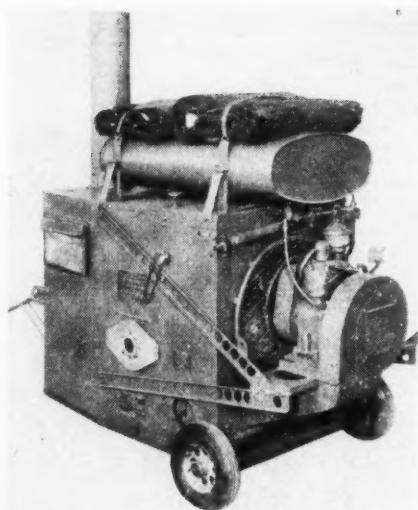


**NON-RECIRCULATING
NON-CLOGGING
NON-QUITTING**

Carver Pumps are offered with a choice of power and mounting in sizes from 1½" to 10". Write for catalog.



CARVER PUMP CO.
Muscatine, Iowa



(Continued from page 124)

190,000 to 250,000 B.t.u. per hour. It consists of enclosed gravity-fed combustion chamber and finned, stainless steel heat exchanger, within which fuel is burned and heat generated. Ventilating air is forced across outside of heat exchanger by means of high-capacity axial fan powered with small gasoline engine or electric motor. Heated air is uncontaminated by fumes or smoke and is discharged through collapsible ducts which can be extended to areas to be heated. Two 12-in.-dia., 24-ft. long, waterproof, flame and heat-resistant ducts are standard equipment.—Herman Nelson Corp., Moline, Ill.

SAFETY - LOCKING HOSE COUPLINGS

—LE-HI Series 150-



B has simple, positive, built-in locking device that provides maximum safety for workers using high-pressure air hose lines. This patented device eliminates danger of accidental uncoupling of hose lines even under roughest service conditions, yet permits instant and easy engagement or disengagement of couplings when desired. No tools are required to operate Series 150-

B and no nails, cotter-pins or other makeshift gadgets are needed. These couplings are fully interchangeable with other Universal-type hose couplings made to accepted standards and will securely lock in engagement with such units. Constructed entirely of bronze, they possess rugged strength and resistance to rust or corrosion.—Hose Accessories Co., 2702-F N. 17th St., Philadelphia 32, Pa.



What Determines a Winner?

In football, it is ability to "carry the ball" against all counter efforts of the opposing team; in Wire Rope, it is the ability to withstand the ravages of wear, tear and bending stresses—*tough opposition at all times!*

For over 66 years, "HERCULES" (Red-Strand) Wire Rope has proved its capacity for getting the job done . . . that's why it is *so regularly selected for so many heavy duty assignments.*

Made in Round Strand and Flattened Strand construction—Preformed and Non-Preformed—there's a correct type for your every requirement . . . an important factor if the most *economical results are to be had.*

Your inquiries are welcome, and we invite them.

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TOURNAPULLS HANDLE on Colorado Big Thompson



8 Tournapulls average 11 trips per hour on 3700' round trip... keep Hesser Construction Co. ahead of schedule.

At 8200' altitude, Hesser Construction Co.'s 8 Tournapulls are pouring earth into Colorado's Granby Dikes on output records that L. J. Hesser says, "no other equipment will equal".

Working in clay and gravel, each Tournapull high-balls a 3700' round trip every 5½ minutes... delivers 11 loads per hour. Rigs haul loaded down 5% grade over well-maintained road, which is sprinkled to keep down dust... spread their loads in 6" layers on the dikes... and return up 5 to 15% grades to the borrow area. To maintain this high rate of Tournapull production, Hesser occasionally uses both snatch and push tractors in extremely hard-loading materials. Project engineers' monthly estimate shows Tournapulls averaging 11 pay yards per trip.

Thus, the entire million and a half yards are being moved by these fast, big rubber-

tired Tournapulls... with the job currently reported well ahead of schedule.

Tournapulls drive in from Greeley

The Tournapulls were driven in to the job via highway from Greeley, Colorado, making the 153 miles in 14 hours. This made it possible for the rigs to start moving dirt within 3 days after the contract was signed.

Hesser, a repeat Tournapull buyer, standardizes on LeTourneau equipment and has been specializing on landlevelling and irrigation work with Tournapulls. Two of his rigs on the Granby Dikes have over 8000 hours and Mr. Hesser comments that "upkeep and maintenance have been very low."

Visit Granby... see for yourself

By all means, if you get out to Colorado, look over this Tournapull job... see for yourself what these modern, rubber-tired, high-speed dirtmovers can do... or ask your LeTourneau Distributor for job-proven facts and figures of profitable Tournapull performance on all kinds of jobs... in all types of materials... on both long and short hauls.

ENTIRE 1,500,000 YARDS River Dike Project



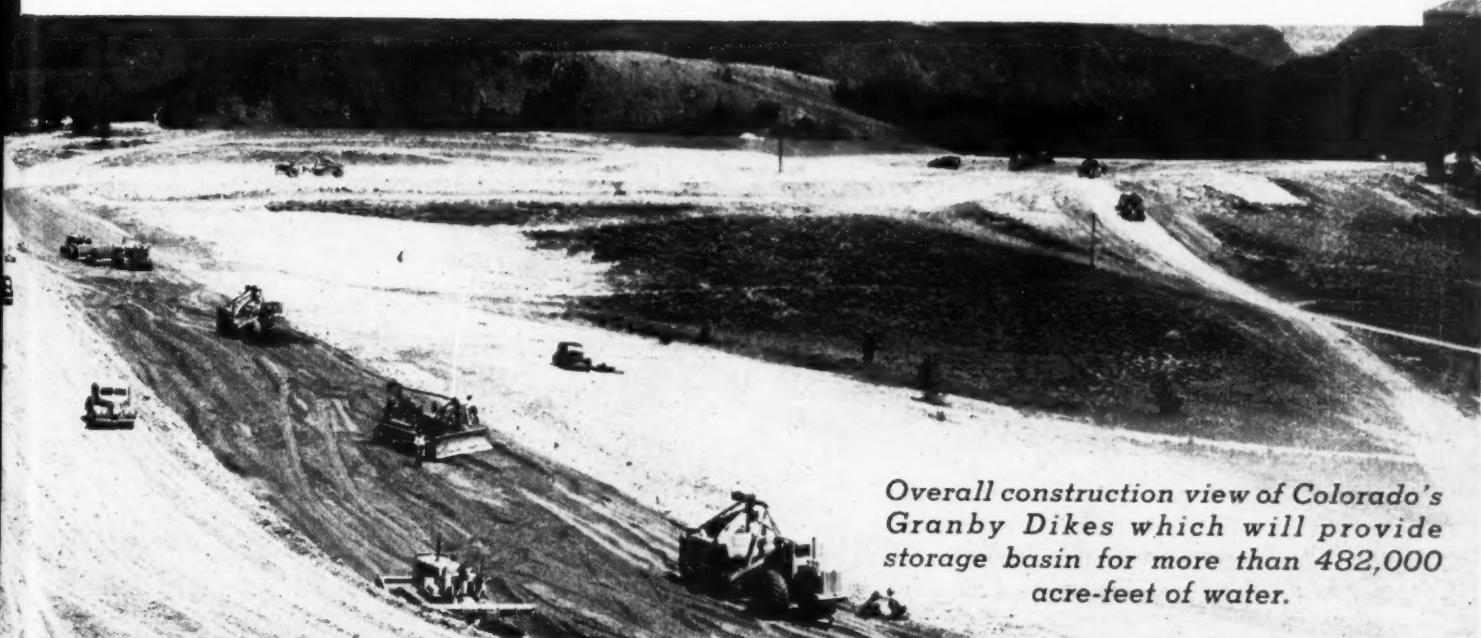
Tournapull spreads its load in 6" layer on the fill, as another highballs back to the cut.



Empties return up 15% grade to cut over well-maintained haul road.



Engineers' monthly average of dirt moved shows Tournapulls get 11 pay yards per load.



Overall construction view of Colorado's Granby Dikes which will provide storage basin for more than 482,000 acre-feet of water.

ETOURNAPULL
PEORIA, ILLINOIS



TOURNAPULL

Trade Mark Reg. U. S. Pat. Off. CS6

FOR LOWEST NET COST PER YARD

WHERE THE
GOING
IS **TUGHEST**



...SPECIFY GAR WOOD!

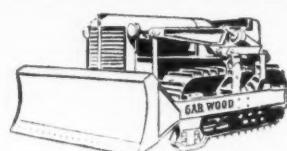
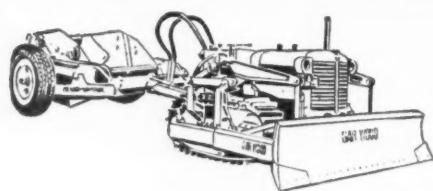
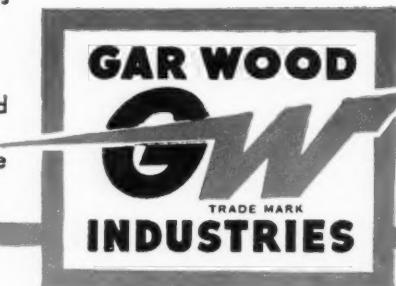
In use everywhere for clearing, leveling, grading, and excavating...All Gar Wood Road Machinery is specifically designed, engineered, and built to make the toughest jobs easy...and more profitable.

That's a fact...for Gar Wood Bulldozers and Dozecasters are the

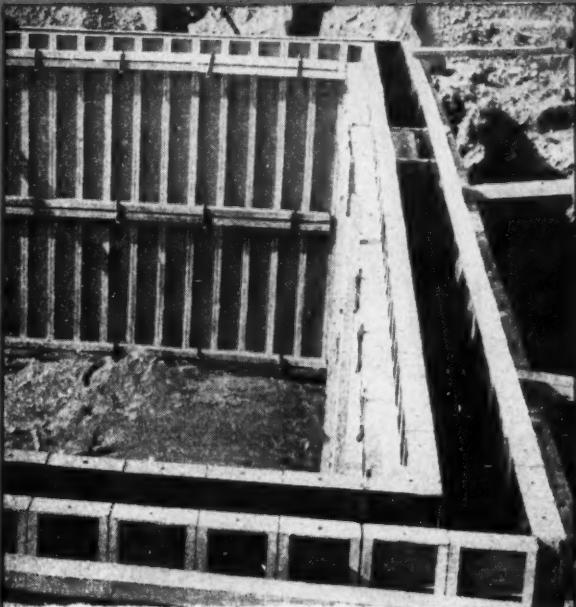
result of practical, down-to-earth engineering. They're constantly being proven and reproven in the field...in mining, quarrying, lumber-

bering, railroading, and general contracting.

Moving the four corners of the earth, rebuilding a war-torn world, Gar Wood Road Machinery has got to be good. For your next job...particularly if it's a tough one...specify Gar Wood.



ATLAS LABOR-SAVING SPEED FORMS



Typical ATLAS SPEED Floor and Wall Forms

You CAN speed up concrete construction and cut form work costs 25 to 50% with ATLAS Steel Forms. Easier to set up, strip and move than plywood forms. Cost less than Plywood. Light-weight; average only 35 lbs. per unit. Inserts easily and accurately accommodated.

For Rent or Sale — Available for Early Delivery.

IRVINGTON FORM & TANK CORP. Write Dept. MC IRVINGTON 22, NEW YORK
New York City Sales Office: 43 CEDAR STREET

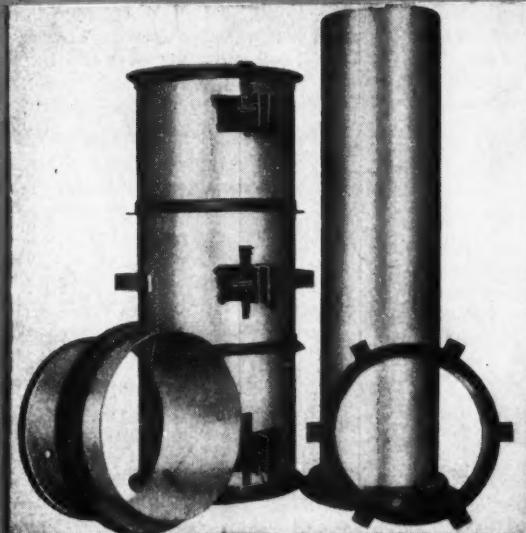
Tel. BOWling Green 9-4030

Patent Pending

Strong—No studs or joists required as with wood forms. Durable—can be used over and over indefinitely. Finish is smooth and free from grain marks, knots or honeycombs—only a few lines. Type A forms leave slight fins. Type B no fins. Ask for folder.

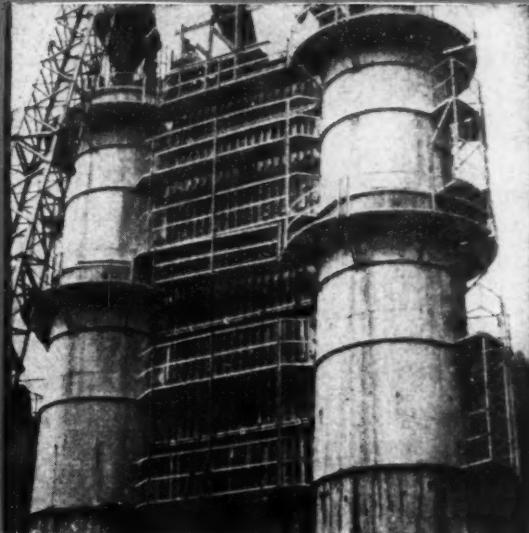
For Rent or Sale — Available for Early Delivery.

CONCRETE FORMS FOR EVERY PURPOSE



ATLAS CONCRETE PIPE FORMS—You SAVE Time and Money with ATLAS CONCRETE PIPE FORMS because you can count on them to stand up under hard usage, hold their shape and turn out high grade pipe over a long period of time . . . pipe which is smooth, round and true with joints that fit accurately together.

Operation is speedy both in setting up, filling and removal of pipe. Write for complete facts.



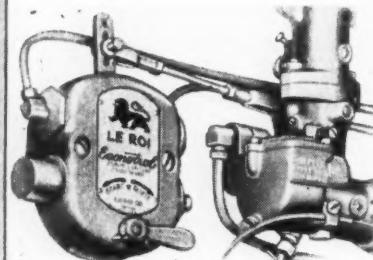
BRIDGE PIER FORMS on Route 40, Somerset, Pa., Cayuga Const. Co., General Contractors. Piers are 128' high, 11' diameter at base, 5' diameter at top. Arch is supported by centering. Cross wall is 60' high. Steel forms gave true contour and smooth surface—no finishing necessary. A pour of 28'-0" of concrete per lift was required with forms which could be set up, stripped and moved rapidly from pier to pier.

ATLAS STEEL CONSTRUCTION COMPANY
742 LATO STREET

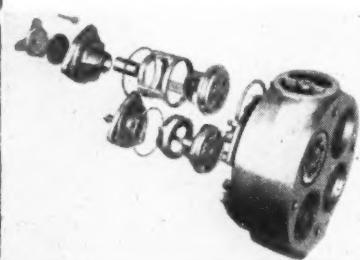


Portable Air Power **AT ITS BEST**

that's what users say about dependable, economical **LE ROI AIRMASTER**



Here it is in one handy unit — the Econotrol's simplicity makes it foolproof and trouble-free. There are no complicated adjustments to be made. Dependable regulation plus slower piston speeds provide unusual economy, as well as long and faithful performance.



A micron — one millionth of a meter — that's the kind of accuracy that goes into AIRMASTER valves. The direct, vertical, low-lift, cushioned action of these unique valves further assures long life.

*Reg. U. S. Pat. Off.

Sure, we've tested AIRMASTERS and tested them thoroughly. The results prove that they are unexcelled — that they produce air at low cost and with little trouble. But, despite our 30 years of compressor-engineering experience, we didn't stop there. We didn't want our own pride in doing a swell job of designing to influence our final decisions. That is why we shipped AIRMASTERS to all parts of the country.

Here's what happened — orders were received in greater quantities than ever before (except during the war years when we built over 6,500,000 cfm of portable air power for the armed forces). Dependability and economy were given as the basic reasons for buying AIRMASTERS. Here are just two of the many features that are partly responsible for the money-saving performance of these outstanding portable compressors:

The patented, fuel-saving Econotrol adjusts engine speed to the job-air requirements —

acceleration and deceleration are gradual; fuel economy greater; engine and compressor life longer. Furthermore, the Econotrol maintains higher average working pressures so that air tools do more work.

Cushioned, Super-finished AIRMASTER Valves provide the most efficient, trouble-free means of delivering air. All the valves; i.e., intake, discharge, high and low pressure are 100% interchangeable. They are individually magnafluxed, and the accuracy of their seating surfaces is measured in microns. This accounts for their long life and high efficiency.

AIRMASTER sizes range from 60 to 500 cfm. All styles of mountings are available, and you can have your choice of gasoline or diesel-engine power. Get the most out of your equipment dollar — get portable air power at its best — get an AIRMASTER*. See your nearest Le Roi distributor or write for bulletins giving complete details.

LE ROI COMPANY, Milwaukee 14, Wisconsin

New York • Washington • Birmingham • Tulsa • San Francisco



Le Roi
Heavy-duty engine



Le Roi
Engine-generator set



Le Roi
105 Tractair*

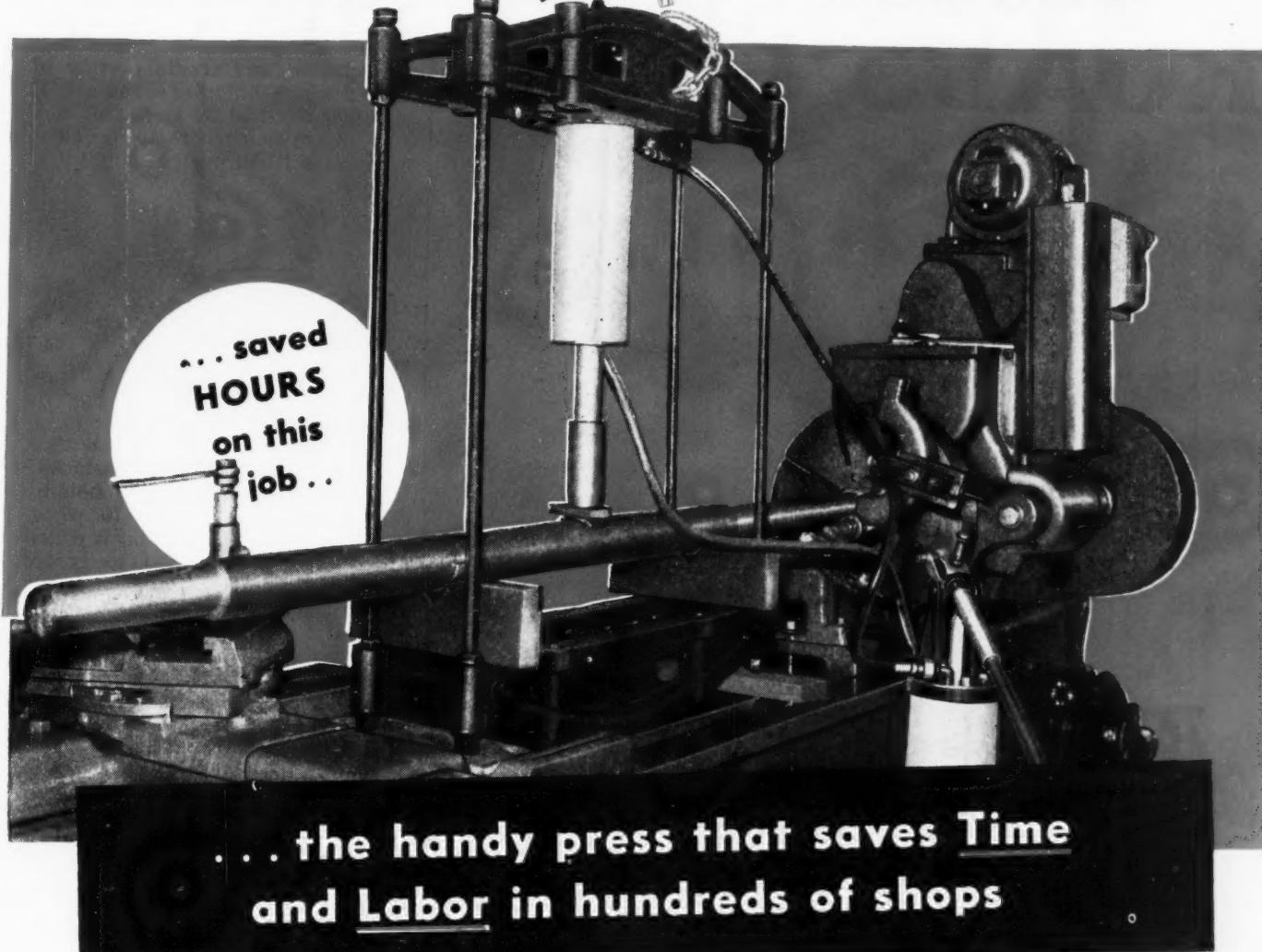


Le Roi
Centaur Mower



C-107

RODGERS Portable UNIVERSAL Hydraulic PRESSES



... the handy press that saves Time
and Labor in hundreds of shops

A portable, all-around press of 1001 uses . . . that's a Rodgers. For example, here is how it saved hours of time and labor on the above job — straightening shafts:

The shafts were 92" long x 3 1/2" dia. and had to be perfectly straight for threading and finishing of ends. They were put on lathe centers, turned to establish the high spots and then placed between the V-blocks on the Rodgers Universal and pressed until the shaft was true. Then the V-blocks were removed, shaft placed on lathe centers again and finished.

The Rodgers Universal remained on the lathe bed while all of many shafts were finished — some of them 120" long x 5 1/2" dia.

Think of the saving — no handling and re-handling off and on the lathe — and it gave them a truer shaft, a better finished job.

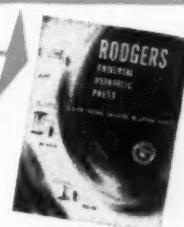
Perhaps your problem isn't shafts — but if you have miscellaneous pressing, pulling, forcing, jacking or clamping work around your shop, you will find a Rodgers Universal Press a mighty handy tool to have. Check into it — today, by writing for complete details.

CAPACITIES—Models from 50 tons to 200 tons.

PORABLE — Light weight, easily handled.

FLEXIBLE—Used flat, on side or on stand in permanent position. Cylinder mounts above or below top frame.

POWER — Supplied by Rodgers 4 speed hand pump or Power-Pump.



SEND FOR . . .
the Rodgers Universal
Catalog.
It gives full details.



Rodgers Hydraulic, Inc.

HYDRAULIC POWER EQUIPMENT



Shop Presses



Crawler-Track Presses

7403 Walker St., St. Louis Park, Minneapolis 16, Minn.

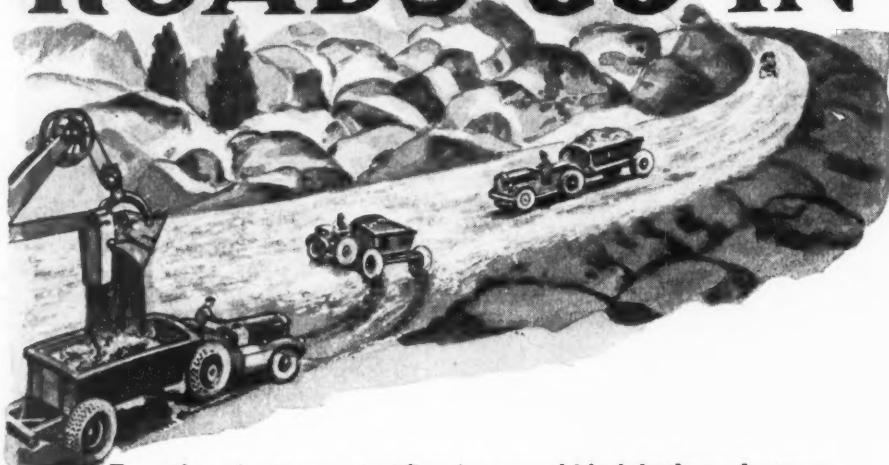


Portable Presses



Power Pump Units

WHEN NEW ROADS GO IN



From the minute you start figuring your bid, right through every stage of construction until the job is finished, you need the help of

ASSOCIATED EQUIPMENT DISTRIBUTORS

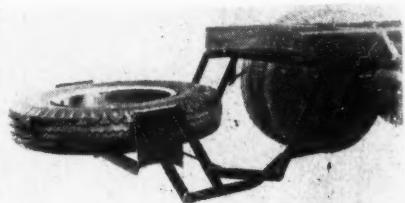


These are the distributors who sell and service the machines you need to do the job, and make money. They are proud of their standing in the construction industry. You can rely upon machinery they offer. You can depend upon their integrity in any business transactions.

**BUY SAFELY—
BUY FROM AN AED MEMBER**

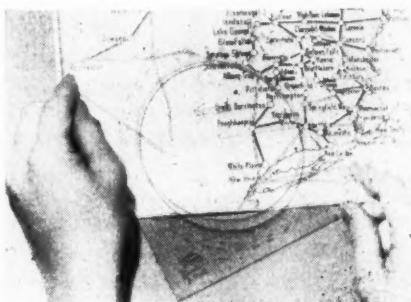
ASSOCIATED EQUIPMENT DISTRIBUTORS
1928 EYE STREET, N.W.
WASHINGTON 6, D.C.

TRUCK TIRE CARRIER—Changing of heavy truck tires and wheels becomes one-man job with new truck tire carrier. No straining or lifting is necessary to remove spare and replace flat. Even tilting to upright position is done without rolling. To change tire, holding clamps are released and cradle portion of carrier which holds tire and wheel is pulled out and away from truck body to position where tire is clear and can be tilted upright while it is



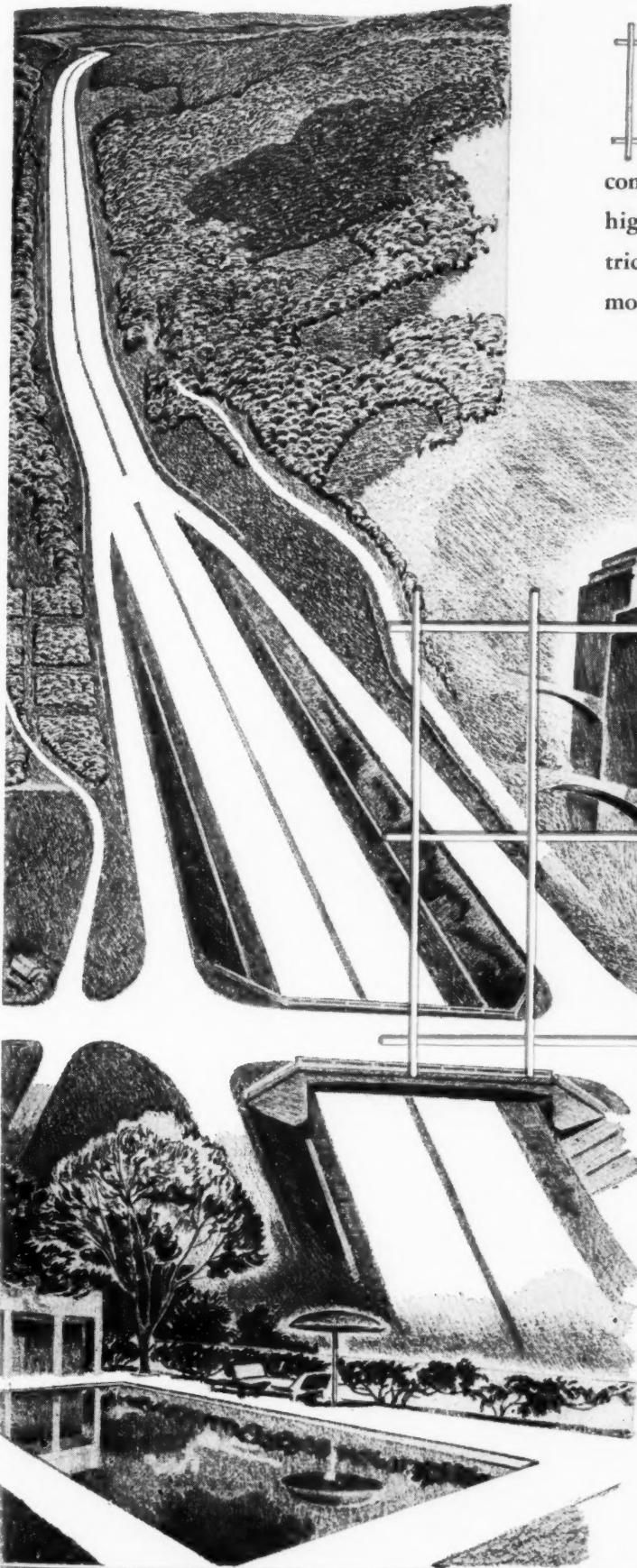
still attached to carrier. Tire then rests on ground and, when detached from carrier by removal of holding clamp, it may be rolled to wheel requiring replacement. Flat is rolled to carrier and clamped to cradle while in upright position, after which it is tilted on cradle swivel to horizontal position, pushed back under chassis in carrying position and securely fastened there with positive clamps that prevent vibration when on road. Carrier is bolted to chassis frame of truck, trailer or bus either at rear or side. It is constructed to withstand load stress equal to four times load it carries under normal use. Model A has maximum capacity of 8.25-20 and weighs 72 lb., while capacity of Model B is 11.00-22 and weight is 93 lb.—T. E. D. Corp., 928 S. Flower St., Los Angeles 15, Calif.

PLOTTING INSTRUMENT—Known as "Plotractor," this new instrument is able to compute its own angles from bearings, eliminating need to figure independently interior and exterior angles and thus expediting



work of engineers, surveyors and navigators. Interior rotor revolves full 360 deg. and is calibrated the same as surveyor's transit. Instrument is made of Nitron, cellulosic product of Monsanto Chemical Co.'s Plastics Division.—Cardinell Products, Montclair, N. J.

Plan Concrete Construction with this Proven Reinforcement



American Welded Wire Fabric has eminently served the ever-expanding field of reinforced concrete construction. Its closely and accurately spaced high strength steel wires of uniform quality — electrically welded into a prefabricated mat — provide the most effective and economical concrete reinforcement.



American Steel & Wire Company

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco,

Pacific Coast Distributors

Tennessee Coal, Iron & Railroad Company, Birmingham

Southern Distributors

United States Steel Export Company, New York

UNITED STATES STEEL

ENGINEERED FOR BALANCE

Means more "Pay-Dirt" to Contractors.

Dependable tractor equipment operation is essential to earthmoving profits—it's the secret of success.

Isaacson Engineers realized this in designing their line of tractor equipment. They knew that perfect coordination between tractor and equipment would eliminate breakdowns and costly delays by utilizing every ounce of power, without excessive wear, they could give more "pay-dirt" every load—more loads per day—more profitable days per year of operation.

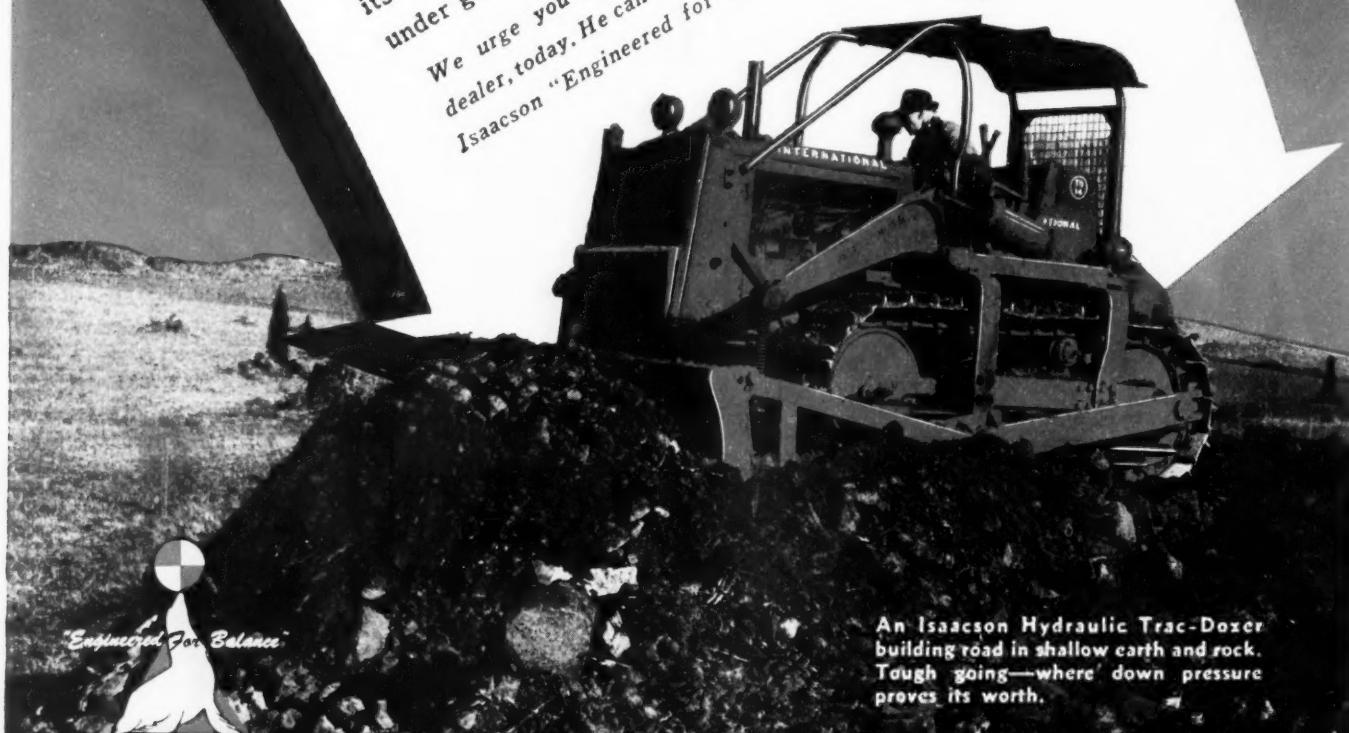
That's why contractors on the toughest earthmoving jobs select Isaacson "Engineered for Balance" tractor equipment. They have definite proof in tractor performance of its value, they know it can be depended upon to stand up under gruelling work schedules.

We urge you to see your International Tractor dealer, today. He can help you get more "pay-dirt" through Isaacson "Engineered for Balance" Tractor Equipment.

Isaacson Tractor Equipment

Cable or Hydraulic Trac-Dozers, Karry-Skrapers, Super Rooters, Klearings, Dozers, Cable Power Units, Winchhoists.

There's a big dividend in using Isaacson Tractor Equipment with your International Trac-Tractor.



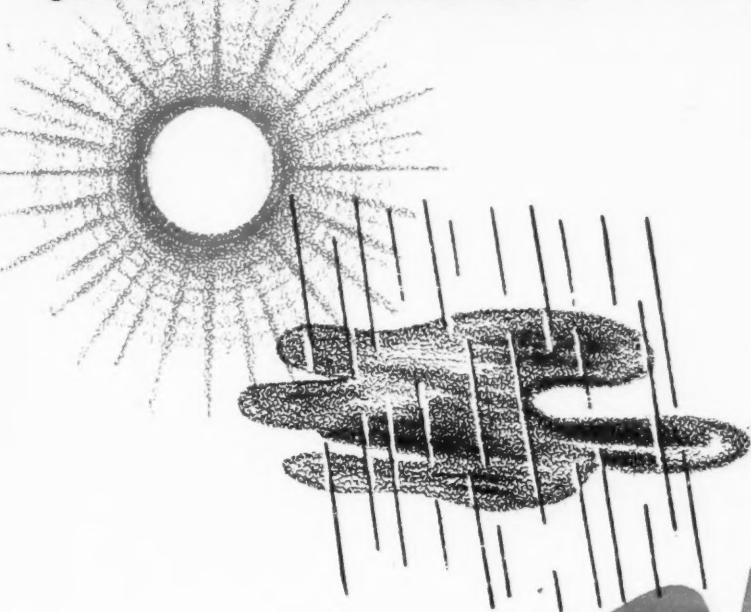
An Isaacson Hydraulic Trac-Dozer building road in shallow earth and rock. Tough going—where down pressure proves its worth.

ISAACSON

Tractor Equipment

A PRODUCT OF THE ISAACSON IRON WORKS • SEATTLE

Bad Weather can't stop 'em!



SCHRAMM

Heat—rain—dust—frost—all the difficult weather conditions encountered in 'round-the-year operation do not impair the high working efficiency of SCHRAMM Air Compressors.

SCHRAMM completely water-cooled machines function perfectly even with the compressor doors locked, thereby eliminating the hazards of grit, dust and theft.

SCHRAMM portable or stationary units are compact, light-weight and push-button controlled, provide *continuous* operation, and show record economies in operating and maintenance costs.



SCHRAMM No. 315 Air Compressor operating three heavy-duty jackhammer drills.



Quarry operations powered by a SCHRAMM Air Compressor.

Write for Bulletins

SCHRAMM INC.

THE COMPRESSOR PEOPLE
WEST CHESTER
PENNSYLVANIA

**FEWER MEN
PLACE MORE CONCRETE
FASTER**



WITH
A *Mall*
REG. U. S. PAT. OFF.

Concrete Vibrator

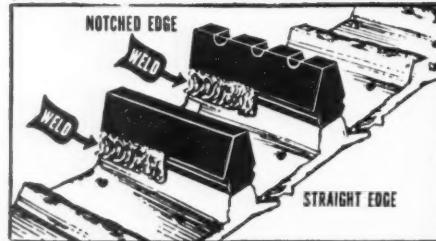
Beat the shortage in time, labor and material with a Mall Concrete Vibrator. It places concrete five times faster than hand puddling . . . it is easily transported and operated by one man . . . and it handles a stiffer mix, thereby saving sand, water and cement. In addition, Mall-vibrated concrete has increased compressive and flexural strength . . . assures greater density and watertightness . . . and provides better bond between successive layers and between concrete and reinforcements. So for a better job done faster by fewer men with less material . . . use a Mall Concrete Vibrator.

Various models are available—1½ H.P. gasoline powered model; 3 H.P. round base or wheel barrow mounting; 1½ H.P. Universal Electric and 7500 r.p.m. Pneumatic unit.

Ask your Supplier or write for literature and prices.

**MALL TOOL COMPANY 7757 South Chicago Ave., Chicago 19, Ill.
CONTRACTORS EQUIPMENT DIVISION**

Rebuild your
TRACTOR GROUSERS
WITH **BULLDOG**
Grip-Lugs



**Easily Welded
ECONOMICAL
GIVES MORE
PULLING POWER**

See your local
Equipment Dealer

Send for Folder CM

ALLIED STEEL PRODUCTS, Inc.
7835 Broadway
CLEVELAND 5 OHIO, U. S. A.

Shunk *Snow
Plow
and Ice Removal
BLADES*

Proved record
of superior performance.
Made of specially developed
steel to withstand severe
service conditions.

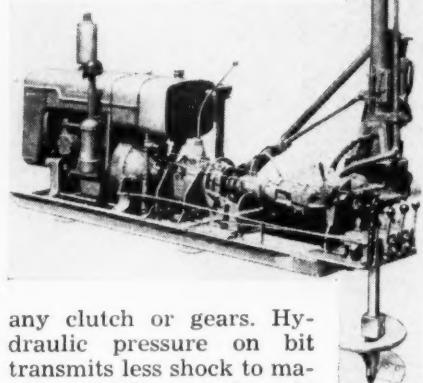
FOR ALL TYPES AND MODELS
OF SNOW PLOWS
Various widths, lengths, thick-
nesses—flat or curved—stand-
ard or special—punched ready
to fit your machine.

**SHUNK SAW-TOOTH
ICE BLADE**

Amazingly effective. Thor-
oughly breaks up and removes
heavy, slippery ice and snow
formations. Replaces all types
of snow plow blades or main-
tenance units. Write for Bulle-
tin and name of nearest
Distributor.

Shunk
MANUFACTURING
COMPANY
ESTABLISHED 1854
BUCYRUS, OHIO

EARTH BORING MACHINE — Hydraulically controlled machine insures ease of operation and provides automatic regulation of cutting speed to suit texture of soil. All plumbing is hydraulically controlled, enabling faster operation and transportation from hole to hole. Hydraulic feed maintains constant pressure on bit, maintaining maximum r.p.m.'s on auger without slipping of



any clutch or gears. Hydraulic pressure on bit transmits less shock to machine while digging in hard-to-drill soils. Hydraulic fingertip control reduces operator fatigue to minimum. One man easily operates machine as all controls are conveniently located. Holes up to and including 24 in. in diameter can be drilled. Depth of hole is 8 to 9 ft. with standard machine. Total weight is 3,400 lb. It is 4 ft., 3 in. wide and 10 ft. long—Jaques Power Saw, Denison, Tex.

TANDEM ROLLER—The 2 to 2½-ton Pierce Bear roller will soon be available. It is driven from within compression roll, according to manufacturer, in such manner as to roll 100 percent against curb up to 24½ in. high, within 1½ in. of high wall or building. Two paired rolls in front are made of fabricated and welded steel plates, with spacing washers



between to permit easy steering. Each half may be ballasted with water. Single rear roll has watertight heads and pintle made of fabricated and welded steel plates.

(Continued on page 142)



Cuts Breakdowns on the Job!

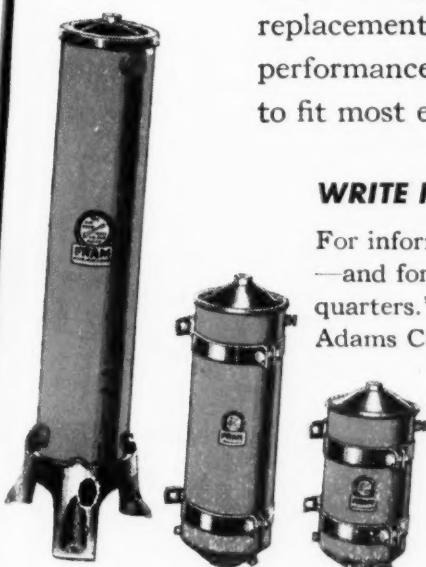
Dust, sand, dirt and grit can quickly tear up engines in construction work—but not if you're protected by Fram Filcron oil filters! This amazing oil filter actually traps abrasive particles as small as *one micron*—.000039 of an inch in size! It prevents the formation of harmful sludge, thereby cuts down breakdowns, teardowns, overhauls and repairs—and that means big savings in time and money for you!

If your engines are already filter-equipped, you can install genuine Fram replacement cartridges to step up filter performance—which improves engine performance. Keeps engines out of the repair shop. There's a Fram cartridge to fit most every type of filter.

WRITE FOR FREE DATA SHEETS TODAY

For information on Fram Filcron lube filters and Fram Filcron Diesel fuel filters—and for answers to any question about oil filtration, write to "Oil Filter Headquarters." Address: Fram Corporation, Providence 16, R. I. In Canada: J. C. Adams Co., Ltd., Toronto.

FRAM Filcron Filter
THE MODERN OIL & MOTOR CLEANER



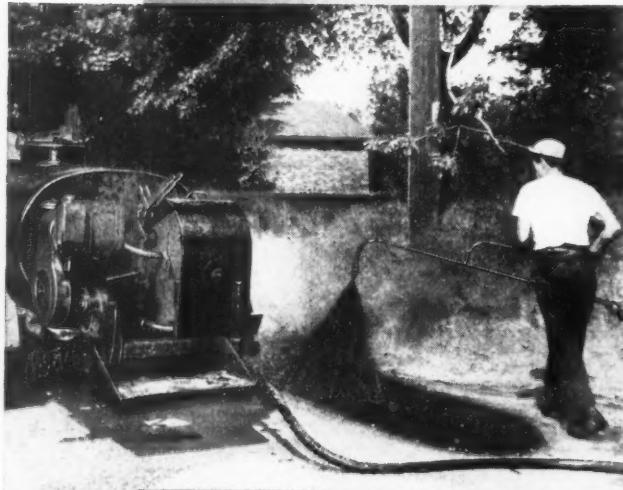


BEAT WINTER ..to the Punch!



Patch Now

Day to day traffic will soon make a large chuck hole out of a small surface crack. Repair surface failures early and prevent costly later repairs. Thoroughly clean out the surface break. Square the hole up in the direction of traffic. Prime the base of the hole. Fill with new aggregate. Roll or tamp. Seal again with asphalt and cover it with aggregate or sand. Early treatment will save you many many dollars.



PRODUCTS

Pressure Distributors • Street
Flushers • Maintenance Distribu-
tors • Tar Kettles • Burner &
Tank Outfits • Paving Tools
• Asphalt Pumping Units

Seal Now

Small surface cracks are an invitation to the heavy fall rains and snows, admitting this damaging water to the base of your pavement, causing spring failures. Seal now to assure your road bed of a smooth surface, completely water-proofed, which will add many years to the life of your road. For actual details and specifications, covering all types of repairs and sealing, contact the American Asphalt Institute, New York, New York.



Repair Now

Unless a raveling shoulder is repaired at once, heavy fall rains, resulting freezes, and snow will find immediate access to your road base through this open shoulder. Repair this raveled edge now with a Model S-J Maintenance Distributor, equipped with a spray bar to handle the full shoulder or a hand spray for spotting. Write today for details covering this SJ.

Standard Steel Works
NORTH KANSAS CITY, MO., U.S.A.



A fleet of TERRA-COBRAS widening *Ignacio-Santa Rosa Highway* north of San Francisco for Harms Bros., contractors.

Full loads of 18 cu. yds. on this 1800 ft. round-trip haul, trip after trip, are the rule rather than the exception, with Wooldridge Terra-Cobras. Steep climbs to the top of the cut—fast downhill loading—fast break-away and rapid acceleration to top speed contribute to maximum yardage efficiency. Power and speed combined with positive steering control make possible the handling of tons of earth in less time at a lower cost—and with greater safety to operators and equipment. Easier all-around handling of the Terra-Cobra results in less operator fatigue and higher hourly averages. Why not plan to key your earth-moving operations to Wooldridge Terra-Cobras? Get full details, today.

WOOLDRIDGE
MANUFACTURING COMPANY

SUNNYVALE, CALIFORNIA - U.S.A.

TERRA  **COBRA**
Hi-Speed Self-Propelled EARTHMOVERS

WOOLDRIDGE

EARTHMOVING EQUIPMENT

Includes



★ **SCRAPERS**
Tractor-drawn for handling heaping yardages from 6 to 28 cu. yards.



★ **POWER CONTROL UNITS**
Single and multiple drum with universal or roller fairleads.



★ **BULLDOZERS**
Tough and rugged design for standard makes of tractors.



★ **TRAILBUILDERS**
Adjustable angle-blades for standard tractor mounting.



★ **RIPPERS**
Available in light, medium and heavy duty models with two sizes to each model.

**DISTRIBUTOR SALES & SERVICE
FACILITIES IN ALL PRINCIPAL
AREAS & FOREIGN TERRITORIES**

MEMO
CONSTRUCTION TO ALL
SUPTS.

*For Bigger
Payload
Performance*

...the logical first choice is HAISS
HI-POWER. Unique for Sta-in-line
reeving, out-of-the-muck sheaving.
Weight placed for highest digging
power, with closing ratios up
to 7:1. Write for facts.

HAISS
HI-POWER

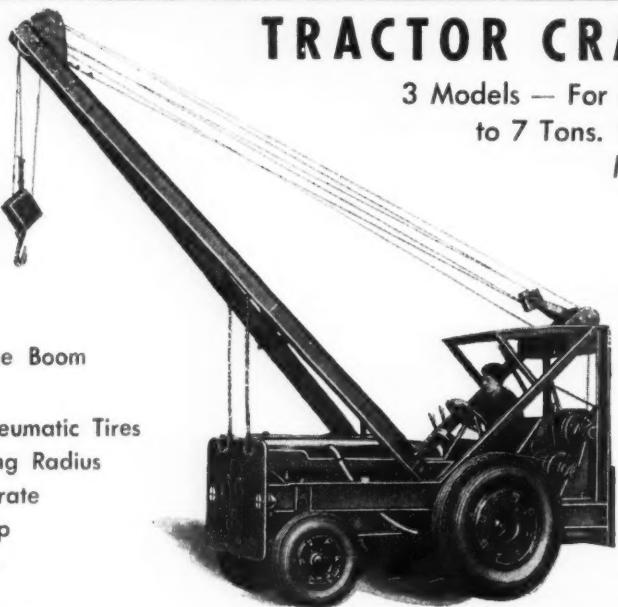
Distributors in all large cities

GEORGE HAISS MFG. CO., INC., 139th St. & Canal Place, New York 51, N.Y.

MERCER
"The Name that Carries Weight"
MATERIAL HANDLING EQUIPMENT

TRACTOR CRANES

3 Models — For Loads Up
to 7 Tons. Write for
literature.



Special Type Boom
Designed

Solid or Pneumatic Tires
Short Turning Radius
Easy to Operate
Low Up-Keep
Clear Vision
Live Boom

MERCER ENGINEERING WORKS, INC.
Plant: Clifton, N.J.

SALES REPRESENTATIVE

MERCER-ROBINSON COMPANY, INC.
30 CHURCH ST., NEW YORK 7, N.Y.

(Continued from page 138)

Body, of special design, eliminates many parts normally used and steering is of conventional worm and segment type.—Lewis Manufacturing Co., 415 Hoefgen Ave., San Antonio 6, Tex.

WALL AND PAVEMENT BREAKER

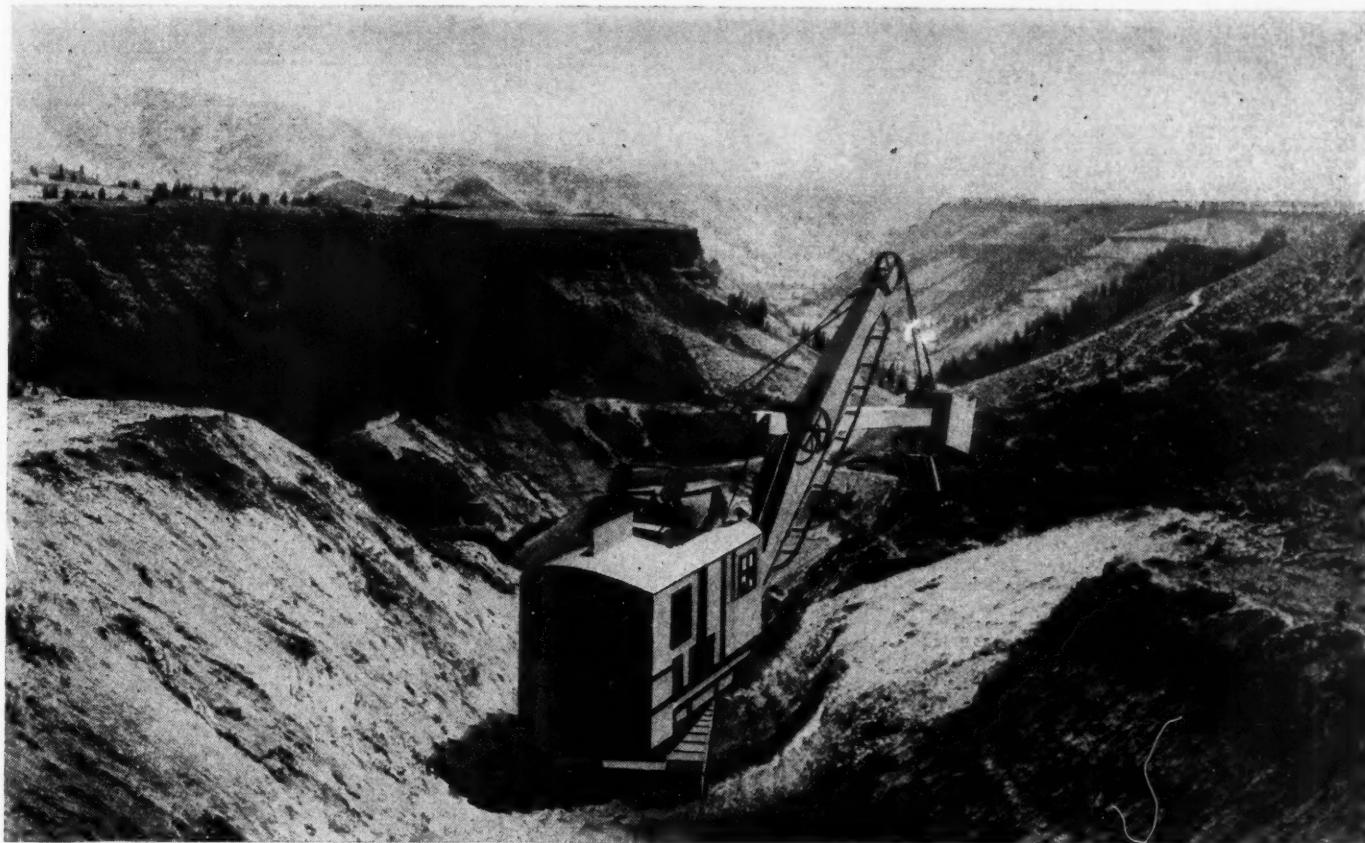
—New pavement breaker has detachable frame with which it is possible to operate hammer in horizontal position, which is effective in breaking up walls up to 12 ft. high. Hammer can be elevated or lowered with chain air hoist and frame attachment can be added or removed in approximately 30 min. Without attachment boom is tipped up to vertical position. Compressor having capacity of 210 cfm. will operate machine to its maximum efficiency up to sixty 10,000-lb. blows per minute. In pavement breaking machine cuts width ranging from 6 in. to 5 ft. and will break pavement to any desired size. In trench work machine can be used for tamping in backfill.—Rapid Pavement Breaker Co., 1517 Santa Fe Ave., Los Angeles 21, Calif.

STANDARD SPEED JACK

Simplex ball bearing bridge and industrial jack, No. 2522, has capacity of 25 tons and will lift maximum height of 10 1/4 in. Weighing only 140 lb., it lifts high or low work to full rated capacity on corrugated top cap which is 22 in. above ground level or on 10-in. square toe lift which is only 4 1/8 in. above ground level. Fully inclosed, dirt-proof ratchet and elevating mechanism are at top of jack.—Templeton, Kenly & Co., 1020 S. Central Ave., Chicago 44, Ill.

"CENTER-FINDER" PROTRACTOR

—New tool enables layout men to mark 4 equidistant points on circumference of pipe of any size at any degree at same time, serves as 360-deg. protractor, has 0-90-0-deg. scale together with double-reading of 1/2-in.-per-ft. pitch scale. All calibrations are etched on stainless steel. Complete tool weighs only 10 oz.—Interstate Sales Co., 1121 Broadway, New York 10, N.Y.



A SHORTER ROUTE TO MORE PROFITS

CONTRACTORS: Your business is to move earth . . . cut through mountains . . . level-off terrain for bridges, highways and roads . . . erect buildings. Our business is to help you acquire any necessary equipment needed to handle the work properly and economically and, by financing your equipment purchases, working funds are left unimpaired for other uses.

Whenever you are faced with the necessity of buying additional equipment, C. I. T. WILL FURNISH THE FUNDS AT LOW COST. All you need do is make a moderate initial investment . . . we give you ample time to repay the balance. Conserve your working capital for pay rolls, supplies, other operating expenses. Let the equipment help pay for itself out of earnings.

No lengthy negotiations are necessary. Just tell us what you want to buy and how you wish to pay for it. Any of these offices will be glad to handle all details promptly. Rates, terms and full information available upon request and without obligation.

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CHICAGO

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ATLANTA



660 Market Street
SAN FRANCISCO

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LOS ANGELES

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Metropolitan Building, Toronto, Canada



Send for booklet explaining
how YOU can take a shorter
route to more profits.

AFFILIATED WITH COMMERCIAL INVESTMENT TRUST INCORPORATED

Either Way—You Save Time

With this Versatile Tool!

Use it as a PORTABLE TOOL!

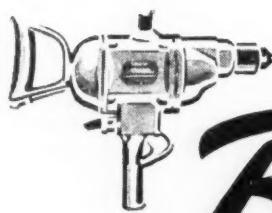
A Black & Decker $\frac{1}{2}$ " Heavy-Duty Drill has plenty of power, plenty of stamina, for your toughest drilling and boring jobs. Whether you're drilling through wood or metal . . . "framing up" concrete forms . . . tying rafters together . . . or driving wood augers through heavy timbers and planking . . . this Drill works "round-the-clock" in all kinds of metals, wood, compositions. Drills up to full capacity in steel, double capacity in hard-wood . . . drives Black & Decker Hole Saws up to $3\frac{1}{2}$ " diameter. Right angle attachment (inset) speeds up work in close quarters.



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RADIO TELEPHONE—Mobile radio telephone equipment in truck enables driver to make and receive local and long-distance telephone calls to and from any Bell system or connecting telephone unit in the United States or overseas. New service is application of frequency modulation radio principles and



equipment consists of receiver, transmitter, antenna, selective signaling device, instrument holder and hand set. Conversations travel part way by radio and part way by telephone lines. Amber light and bell under dashboard of truck indicate when telephone operator is attempting to contact truck. Equipment may also be used in ship-to-shore conversations.—**Bell Telephone Laboratories, New York, N. Y.**

POST HOLE DRILL—Rugged, fast digging and portable earth-boring machine is specially designed for electric pole line jobs and for boring foundation pier holes. Field tests and on-the-job operations have proved its ability to "make hole" efficiently in all types of hard or clay earths. Sticky clays may be cleaned off bit automatically by high speed power throw-off. Hard ground is drilled easily and hard pan, caliche, shale and soft laminated rock may be drilled without harm to machine. Inclined or vertical holes, 8 to 36 in. in diameter and from 1 to 20 ft. in depth, depending on drill model, may be drilled cleanly and quickly and by one operator. Larger diameter holes may be drilled by a simple change of rotary speed.—**Hugh B. Williams Machine Shop, 2946 Oak Lane, Dallas 10, Tex.**

INDUSTRIAL PAINT—Known as Rustrem (Rust Remedy), new black paint seals rusty surfaces and stops rust permanently. It can be applied directly over rusty surfaces without cleaning or scraping. Wherever metal must be protected, Rustrem is said to prevent further oxidation and to provide base for decorative paints.—**Speco, Inc., 3142 Superior Ave., Cleveland, Ohio.**

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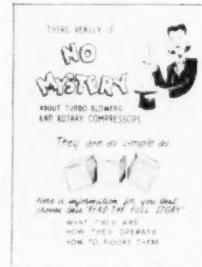
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The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use



TURBO - BLOWERS — (16-p. booklet) Fully explains turbo blowers, rotary compressors and vacuum pumps. Designed for student training, it shows simple construction of

turbo-blower and reproduces curves depicting pressure volume, influence of water vapor on volume and correction curves for volumes to maintain constant air weight with changes in temperature and barometric pressure.—Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

ON - AND - OFF TRACK EQUIPMENT—(4-p. folder) Describes auto-railer, dual-purpose vehicle for operation on railroad tracks and highways. It is available as chassis on which various types of bodies and equipment can be mounted.—Evans Products Co., Detroit, Mich.

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NOVO ENGINE CO.
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STRENGTH OF NAILED JOINTS

(24-p. book) Written by F. J. Crandall, it presents results of investigation on types of nailed joints most used in temporary wooden structures on construction projects. A set of design rules is given for erection of these structures.—Liberty Mutual Research Laboratory, 175 Berkeley St., Boston 17, Mass.

RIP AND SIZING SAW—(4-p., two-color bulletin) Describes Model 50, designed for use either with Linderman automatic wood prefabricating machine or as general purpose saw for woodworking industry. Pictures and detailed specifications are included.—Muskegon Machine Co. Inc., Newburgh, N. Y.

BRICK AND TILE MASONRY

(16-p. folder) Outlines future open to young men in masonry craft.—Structural Clay Products Institute, 1756 K St., N.W., Washington 6, D.C.

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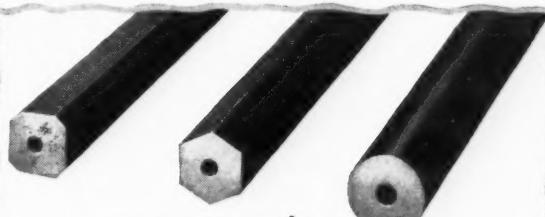
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★ **BETHLEHEM HOLLOW DRILL STEEL**



Bethlehem Hollow Drill Steel putting down the line holes for the initial blast on the Davis Dam, which will be an earth-and-rock-filled structure, creating a reservoir of 2,000,000 acre-feet of water.

Left: 24,000 lbs. of dynamite making the first blast at Davis Dam.



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Explains basic types of ion-exchanging water softeners for industrial, institutional and municipal use. Water softeners are of both pressure and gravity types which feature automatic equipment to control backwashing, brining and rinsing processes.—The Permutit Co., 330 W. 42nd St., New York 18, N. Y.



CONCRETE VIBRATORS—(12-p. catalog) Describes design, construction and efficiency of gasoline and electrically operated high-speed vibrators, surfacing attachments and tools for all concrete work. It also contains condensed outline and illustrations of other equipment made by company.—Master Vibrator Co., 200 Davis Ave., Dayton 1, Ohio

RUST PREVENTION—(Descriptive catalog) Outlines qualities of company's rust preventive products for industrial, railroad, marine, farm and general uses. Problems of scientific rust control, together with directions for use and application of Rust-Oleum are given in catalog's first section. Specifications are organized for easy reference through use of 39 color cards, augmented by 12 color panels of machinery and implement finishes. Third section outlines recommendations and inside back cover contains handy index of products in new post-war line.—Rust-Oleum, 2425 Oakton St., Evanston, Ill.

MINING TOOLS—(16-p. catalog) Introduces snap-button augers, plug drill bits, core drill bits, additional sizes in two- and three-way rotary drill bits, and expanded line of undercutter bits. It provides complete buying information, illustrates proper selection and application, and instructs on methods of use and maintenance to insure optimum performance.—Kennemetal, Inc., Latrobe, Pa.

PORTABLE HYDRAULIC PIPE BENDER—(8-p. bulletin) Gives details of construction, capacity, features and maintenance. Chart of radii of bends to center line of pipe is included.—Watson-Stillman Co., Roselle, N. J.

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GRADERS AND ROLLERS—(Three catalogs) Catalog No. 290 describes 102 heavy-duty motor graders. No. 288 covers 402 light-duty motor grader, designed for economical light construction and ordinary mainte-



nance work. No. 295 tells about portable roller, which is said to have the compression effectiveness of conventional 5- to 7-ton tandem roller and with added advantage of quick and easy towing by truck from job to job.—**Galion Iron Works & Mfg. Co.**, Galion, Ohio.

TECHNICAL BOOKS—(General catalog) Lists all of company's books, with each one labeled as to year of publication or last revision.—**McGraw-Hill Book Co.**, 330 W. 42nd St., New York 18, N. Y.

PNEUMATIC TRANSMISSIONS—(16-p. bulletin) Written by D. P. Eckman and Louis Gess, it covers advantages and means of pneumatic transmission of instrument reading over long distances.—**Brown Instrument Co., Division of Minneapolis-Honeywell Regulator Co.**, Philadelphia, Pa.

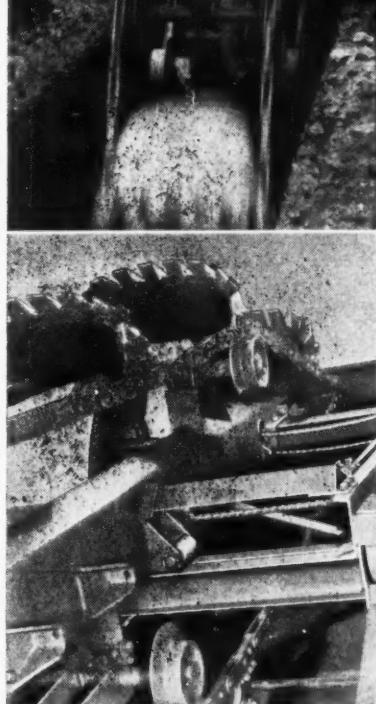
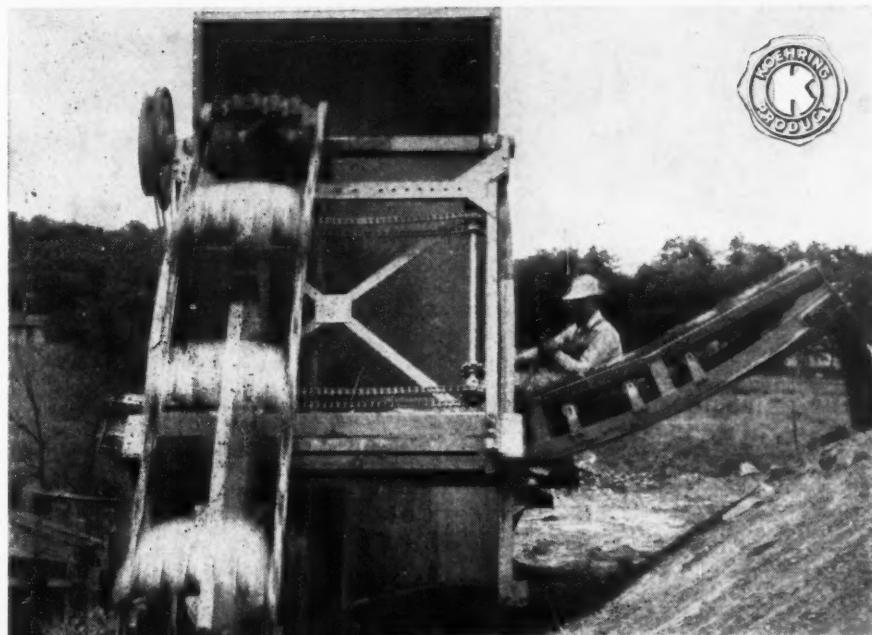
MACHINERY BEARINGS—(6-p. folder) Describes oilless bearings and illustrates variety of uses. Installation features are listed.—**Nolu Oilless Bearing Co.**, 18 E. Johnson St., Germantown 44, Philadelphia, Pa.

RADIAL ARM SAWS—(8-p. folder) Features new large-size saw and advanced design of drill press.—**T. H. Ball & Sons.**, 850 Euclid Ave., Cleveland 14, Ohio.

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SNOW AND ICE REMOVAL—(8-p. folder) Tells why, when and how sterilized auger action rock salt should be applied on highways, streets and airport runways.—**International Salt Co., Inc.**, Scranton, Pa.

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WELDING ALUMINUM — (88-p. book) Covers latest practices and recommendations for joining aluminum by gas, arc and resistance welding, brazing and soldering. It analyzes recommended gas welding practice, and includes chapters on welding by metal-arc, carbon-arc, atomic-hydrogen and inert-gas-shielded processes.—Reynolds Metals Co., Louisville, Ky.

RUBBER PRODUCTS — (Pictorial bulletin) "The Manhattan Story in the Construction Industry" is told with interesting installation photographs showing belting and hose on important construction projects, including Delaware Aqueduct Project, George Washington Bridge, New York West Side Elevated Highway, Mississippi River Bridge at New Orleans, Norris Dam, New York's Triborough Bridge, Wanaque Reservoir Dam, and Santee-Cooper Dam. Raybestos-Manhattan, Inc., Manhattan Rubber Division, Passaic, N. J.

COMPRESSORS — (24-p. booklet) Describes single horizontal air and gas compressors. — Worthington Pump & Machinery Corp., Harrison, N. J.

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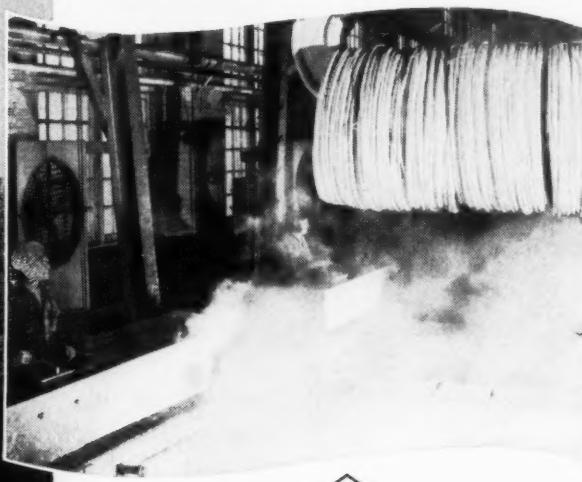
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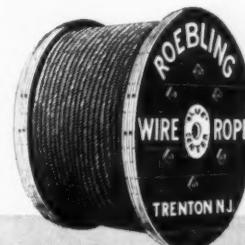
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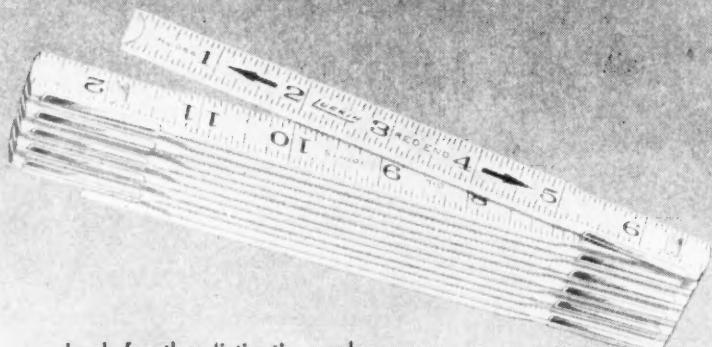


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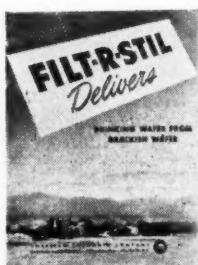
Chicago 39, Illinois

RECORD, INDICATING, CONTROLLING INSTRUMENTS—(4-p. bulletin) Illustrates and briefly describes shunt-flo meter, venturi tubes, flo-watch, propelflo meter, venturi insert nozzle, chrono-flo tachometer, orifice plate and flanges, chrono-flo control, manometers and flo-gage.—**Builders-Providence, Inc., Providence 1, R. I.**

SUCTION HOSE—(Catalog section) Features description of Spiraloock construction which provides smooth-bore, lightweight and easy-to-bend hose. It is recommended for any degree of suction and for discharge pressures up to 30 psi. Other types of suction hose are also pictured and described.—**The B. F. Goodrich Co., Akron, Ohio.**

TRAILER ACCESSORIES—(16-p. bulletin) Describes and pictures air brakes, vacuum brakes, couplers, safety tanks, sander, elevating endgate, winch, lights and safety equipment, horns, jacks.—**Fruehauf Trailer Co., Detroit 32, Mich.**

INSTRUMENTS—(6-p. folder) Describes gages, industrial instruments, safety valves, locomotive equipment and cranes and hoist.—**Manning, Maxwell & Moore, Inc., Chrysler Bldg., New York 17, N. Y.**



POTABLE WATER UNITS

—(8-p. pamphlet)

Describes FILT-R-STIL units and their use in demineralization of highly brackish waters. It includes operating data on

typical successful application of equipment in supplying water needs of entire community. It lists specifications on standard models available, including portable units designed for permanent installations. Mechanical and chemical theories involved are explained with aid of schematic drawings and flow diagrams. Operation involved in FILT-R-STIL unit is described as comparable to simple cold filtration with company's IONAC ion-exchange resins acting as filtering media. No heat and only a negligible amount of electricity is required.—**American Cyanamid Co., Ion Exchange Products Department, 30 Rockefeller Plaza, New York 20, N. Y.**

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FIRE PROTECTION—(20-p. booklet) Explains and illustrates latest techniques in fighting fires with carbon dioxide and other types of fire extinguishers. Entitled "How to Fight Fires and Protect Property," it contains many photographs and diagrams.—**Randolph Laboratories, 8 E. Kinzie St., Chicago 11, Ill.**

STONE FINISH—(24-p., illustrated brochure) Describes patented Formstone process for new construction and renovation of exteriors and interiors. It can be applied over shingles, weatherboard, brick, stucco, cinder block or concrete blocks.—**Formstone Co., 200 S. Franklinton Rd., Baltimore, Md.**



MORTAR AND PLASTER MIXER — (6-p. folder) Contains close-up illustrations of features of mixer, such as adjustable scrapers and structural steel blades; sealed bearings; two-position telescopic tow pole, adjustable for either truck or car hitch; and 4-hp. air-cooled engine. Job pictures are also shown, and table of specifications is included.—**Chain Belt Co., 1600 W. Bruce St., Milwaukee 4, Wis.**

CONCRETE GUNS—(16-p. bulletin) Features three newly improved CMC Jet Crete Gun models. It shows typical on-the-job applications and tells how pneumatically applied concrete can now be used to build, protect, or repair with speed and economy.—**Construction Machinery Co., Waterloo, Iowa.**

AIR CONDITIONING—(376-p. manual, 7th edition) Consists of eight chapters: Heat, Comfort, Heat Gains, Properties of Air and the Psychrometric Chart, Calculations for the Conditioned Air Supply, Refrigeration for Air Conditioning, Water for Air Conditioning, and Duct and Fans. Reference tables present data in simplified form and avoid time-consuming use of mathematical formulas. Its value as text for self-study is enhanced by problems which accompany each chapter, with answers in back of book. Bound in attractive buckram, book is 8x11 in. and is priced at \$5.—**The Trane Co., La Crosse, Wis.**

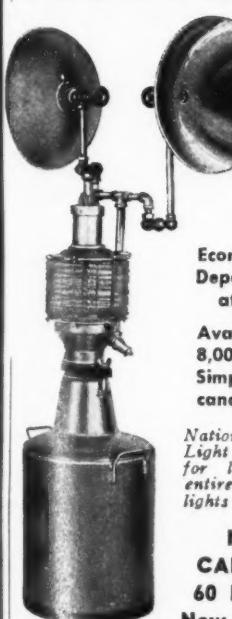
ASBESTOS PROTECTED CABLES—(8-p. bulletin) Describes principal types of Okobestos heat corrosion resistant wires and cables, including power cables, apparatus cables, multi-conductor control cables, switchboard wires and appliance wire.—Okonite Co., Passaic, N. J.

LADDERS—(4-p. folder) Emphasizes safe use of ladders and lists causes of ladder accidents on construction jobs.—Loss Prevention Dept., Liberty Mutual Insurance Co., Boston, Mass.

ILLUMINATION DESIGN—(8-p. folder) Gives information for designing interior lighting installations. Essential information is contained in easily-read tables covering popular types of luminaires, lamps and ballasts. Special emphasis is placed on maintenance with range of values being given for each luminaire. In addition to generally used method of determining average illumination values, tables and curves are given which will permit calculation of illumination at various points when produced by direct lighting unit such as reflector or projector lamp.—Westinghouse Electric Corp., Bloomfield, N. J.

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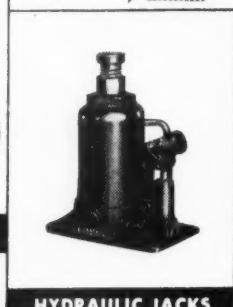
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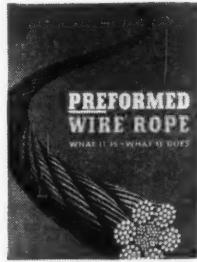
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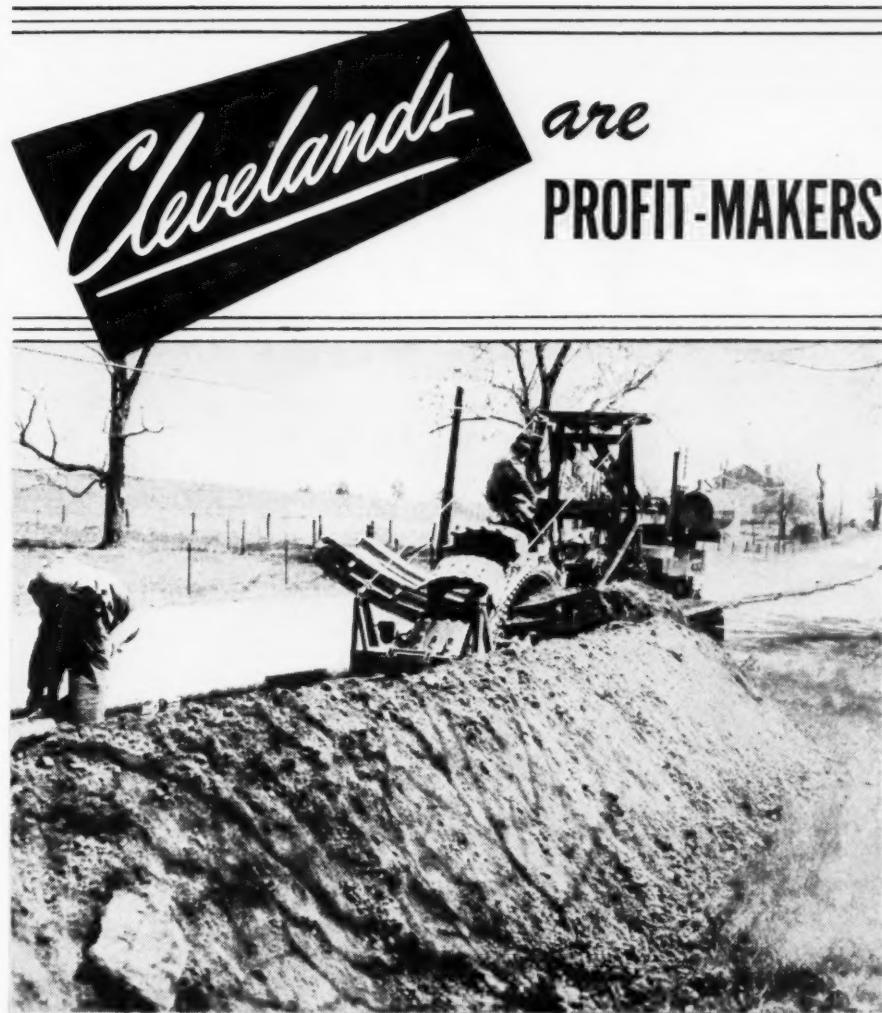


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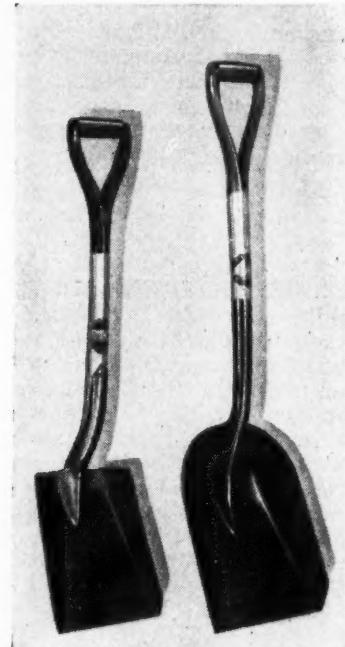
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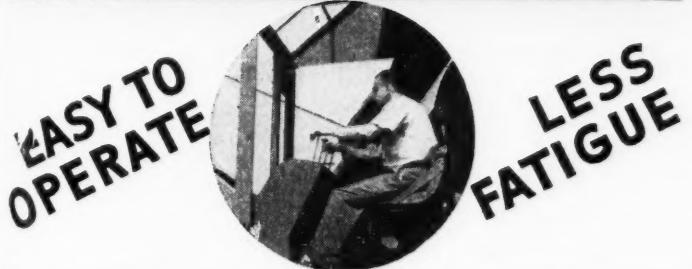
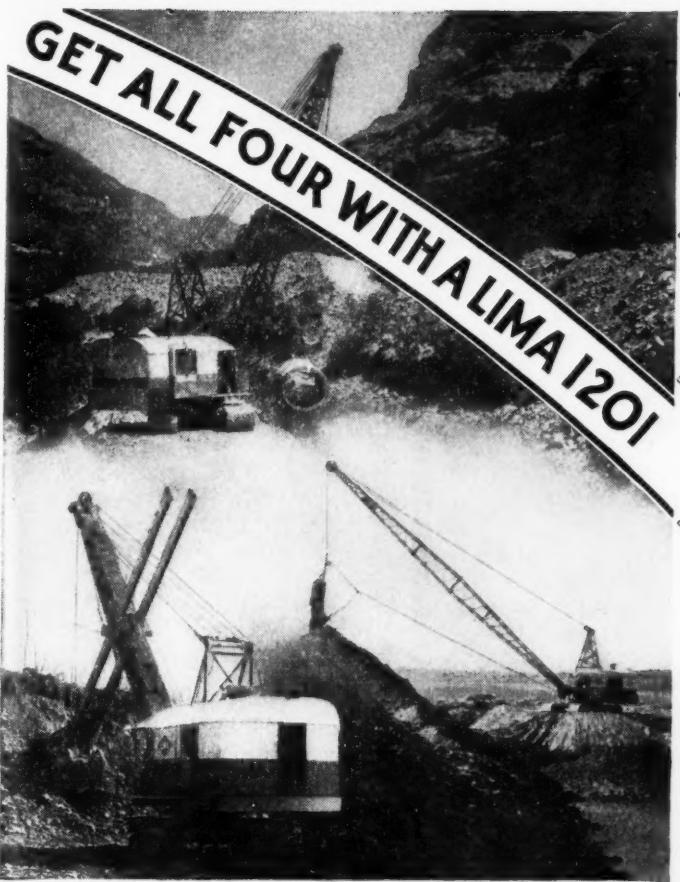


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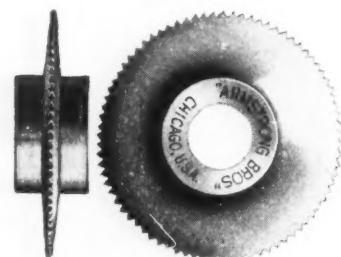
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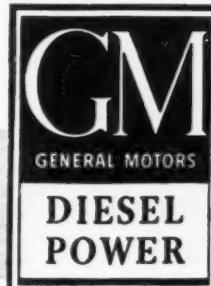
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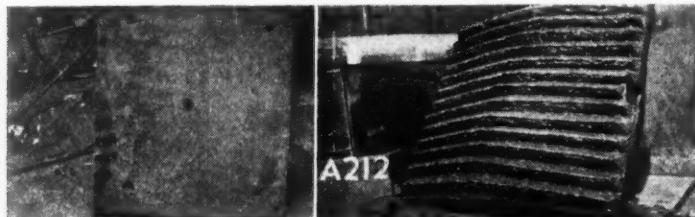
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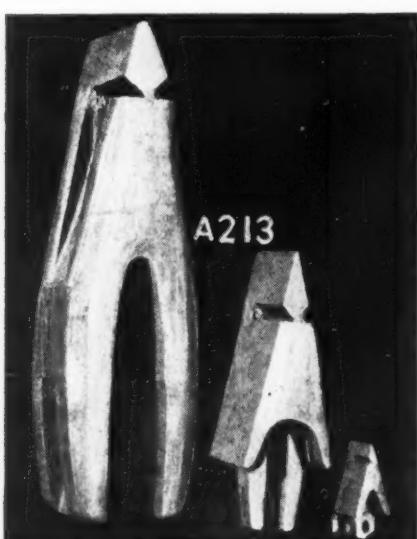
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A-213. Three types of dipper teeth with various sizes of repointers tacked on and partially filled in to show reclamation procedure.

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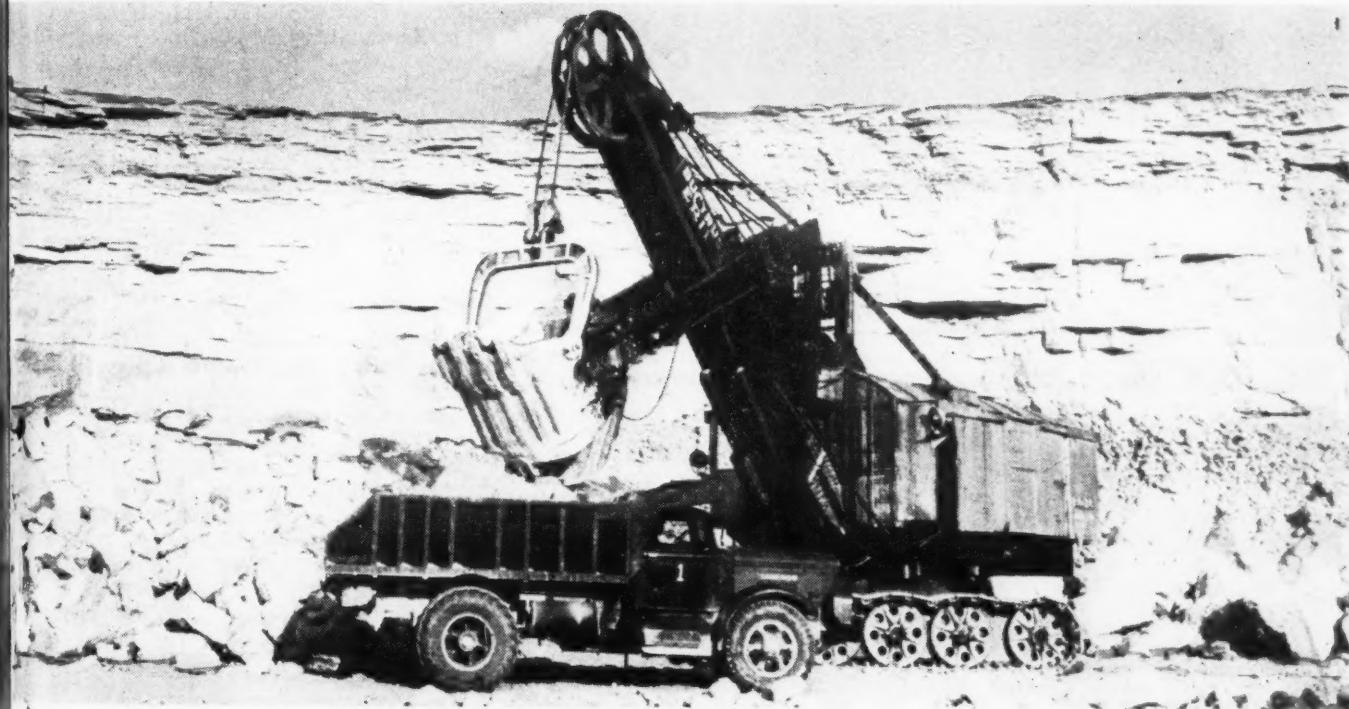
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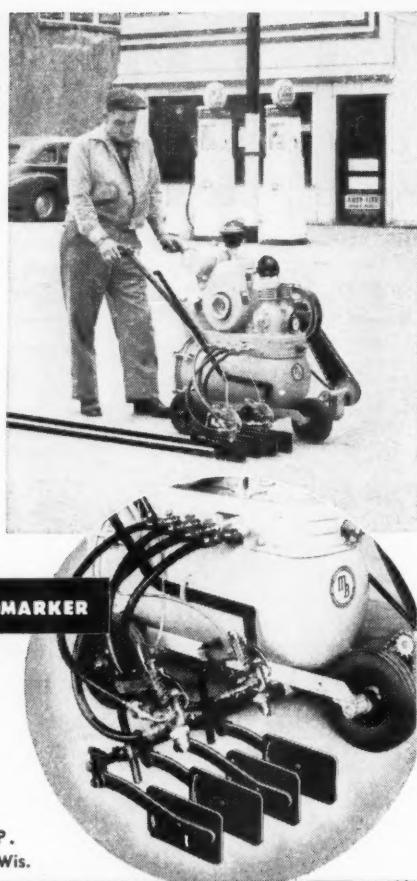
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Chain Belt Co. has materially increased its plant capacity through the purchase of the heavy ordnance plant constructed for the Defense Plant Corp. in West Milwaukee. The plant will be used for the manufacture of chain belts and some construction machinery. Additional office space may be included later.

L. G. Schraub, vice president and general manager, has been elected to the board of directors of Union Wire Rope Corp., 21st and Manchester, Kansas City, Mo.

Charles S. Pillsbury, Chicago Bridge and Iron Co., Chicago, Ill., has been elected executive vice-president. He has been a director of the company for several years.

Benjamin F. Fairless, president of the United States Steel Corp., has announced the election of **John E. Goble** (left) as president of National Tube Co., Mr. Goble succeeds **Charles R. Cox**, who has become president of Carnegie-Illinois Steel Corp., another U. S. Steel subsidiary. Serving as sales vice-president of National Tube company since Jan. 1, 1936, Mr. Goble has been with U. S. Steel and companies now affiliated



with U. S. Steel for the last 21 years. **William F. McConnor** (right) has succeeded Mr. Goble as vice-president in charge of sales. **Marcus J. Aurelius** has been elected sales vice-president of the United States Steel Supply Co., Leslie B. Worthington, president of this U. S. Steel subsidiary, announced today. Mr. Aurelius succeeds Mr. Worthington, who advanced from the vice-presidency to the presidency of the supply company on July 15, upon the retirement of Ernest E. Aldous.

R. G. LeTourneau, Inc., of Peoria, Ill., has announced the following personnel changes in its general sales division: **Wendell Richards**, district sales representative in Pittsburgh, Philadelphia and Baltimore, has been promoted to the post of market research manager. **Cloyd Richards**, assistant service manager, has been named general service manager to succeed **C. F. Zimmerman**, who succeeds **O. A. "Jack" Williams** as district sales representative for Ohio, Indiana and Michigan. Mr. Williams has been appointed eastern sales manager to succeed **Harry Conn**, resigned. Also announced was the appointment of **Harold R. McQuarrie**, eastern credit manager, to the newly-created post of assistant to the domestic sales manager. His duties will include serving as departmental coordinator.

New president of National Clay Pipe Manufacturers, Inc., is **Eugene K. Sheffield**, president and general manager of The Logan Clay Products Co. of Logan, Ohio, and of the New Straitsville (Ohio) Brick Co., succeeding Edward F. Clemens, of the Cannelton Sewer Pipe Co.

B. C. Ames Co., Waltham 54, Mass., has recently been reorganized with **Warren Ames** as president and **H. G. Haynes** as treasurer. This 47-year-old concern will continue the manufacture and sales of micrometer dial gages and micrometer dial indicators.

R. W. Reno Engineering Co. has opened a steel fabricating plant in Torrance, Calif., to make steel truss joists, roof purlins and light structural steel framing. **R. W. Reno** and **V. E. Simhauser** are the principals.

A. M. Byers Co. has announced the appointment of George B. Coffey as manager of the firm's Chicago division, with offices in the Conway Building. Mr. Coffey succeeds W. A. Taylor, who has resigned to enter private business.

Le Roi Co., Milwaukee, has announced that its Birmingham, Ala., office has been expanded to full factory branch. A new building at 631 Ninth St., North, has been completed to house service and sales facilities for the southeastern states.

You can't pass road mixes across the counter like sugar or salt, but certain unique features of KOTAL MASTER MIXES make it possible to handle them almost as easily as that.

KOTAL MASTER MIXES can be stockpiled ready for delivery in any quantity at any time, regardless of season or weather. That's a great convenience and a saving for plant, contractor and customer. Only the KOTAL Process makes this possible.

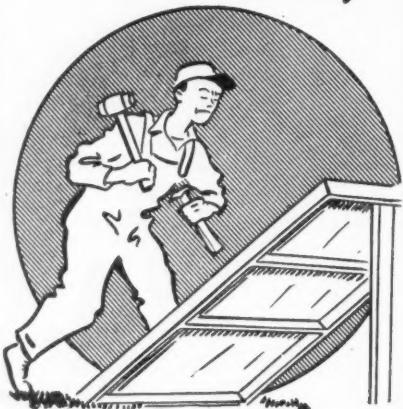
Let us tell you more about this important scientific development in the art of road building and maintenance. We'll gladly send free booklet to you—also the name of your nearest supplier.



KOTAL COMPANY
360 Springfield Ave. ★ Summit, N. J.

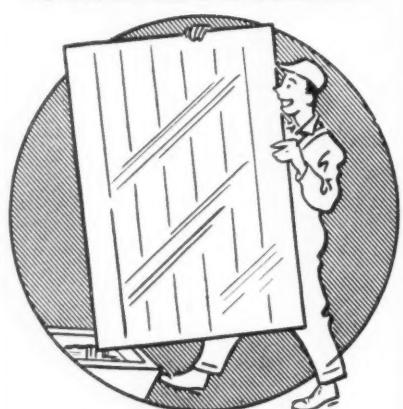
KOTAL Master Mixes
The Advanced All-Weather Aid in Building Better Roads

No More Chipping and Scraping



The cleaning of encrusted cement and concrete from construction forms, tools, mixers, etc., has always been a tedious operation involving a great deal of time and hand labor. Now, with costs high and supply short, we are proud to offer the construction industry our new Concrete Remover.

REMOVE CEMENT and CONCRETE CHEMICALLY



Non-Rust Concrete Remover loosens and removes cement and concrete from both wood and metal, without harm to the item being cleaned. It is most economically applied by dipping and can be used over and over again. For full information, simply mail the coupon below.

NOX-RUST CHEMICAL CORPORATION

NOX-RUST CHEMICAL CORP.
2493 South Halsted Street,
Chicago 8, Illinois

Please send me full information on your new Concrete Remover.

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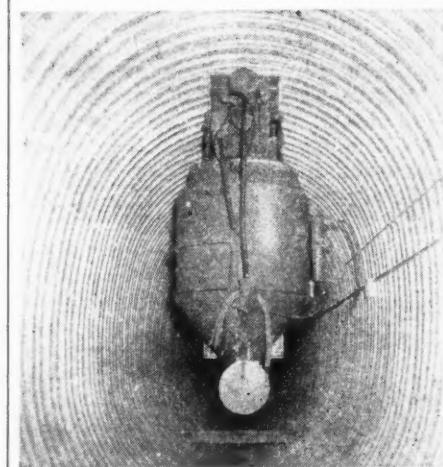
ADDRESS _____

Builders Iron Foundry, Providence, R.I., announces the formation of a new affiliate, "Builders Pacific, Inc.," a California corporation with offices, warehousing and service facilities in San Francisco and Los Angeles. The main office of Builders-Pacific is located at 921 University Ave., Berkeley, and the Los Angeles office at 2085 Belgrave Ave., Huntington Park. Builders-Pacific will represent Builders-Provident, Inc.; the Omega Machine Co., formerly of Kansas City, Mo.; Proportioners, Inc. in Northern California and Walker Process Equipment, Inc., of Aurora, Ill.

The Diamond Wire & Cable Co. has purchased the surplus manufacturing plant in Sycamore, Ill., operated during the war period by the Anaconda Wire & Cable Co. The plant will be used to produce building material and wire needed in the present housing emergency and will employ 125 workers.

The DuPont Co. has announced the retirement of **Everett G. Ackart**, chief engineer, and the appointment of **Granville M. Read** to succeed him. **Melville F. Wood** succeeds Mr. Read as assistant chief engineer.

• • • • •
what 
designed strength
can mean to your
tunnel liner jobs



Rear view of weighing hopper. This elliptical batching tunnel of No. 10 gage Armco Steel is 11 by 13 feet and 460 feet long. Raw aggregates were stored over a 10-foot tunnel, 260 feet long, and wet sand over an 8-foot tunnel, 190 feet long.

Cut Overhaul Downtime!

Slicing time from disassembly, inspection and repair operations is everyday routine procedure in overhaul shops using specialized Oakite materials and techniques . . . for steam-detergent cleaning of grease and muck-covered tractors, mixers, air compressors . . . for complete and cost-saving paint-stripping!

There's work to be speeded, money to be saved . . . right in your overhaul shop! For free, helpful shortcuts, contact Oakite in your locality TODAY! There is no obligation.

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MATERIALS METHODS SERVICE FOR EVERY CLEANING REQUIREMENT

This is how three aggregate tunnels built of ARMCO Corrugated Liner Plates helped speed construction of the Norfork Dam—a 1,500,000 cubic yard job.

First, the plates were easy to handle and install. Then, their designed strength permitted placing the tunnel directly beneath the aggregate pile, which attained a height of 60 feet. Delays caused by freezing in cold weather were avoided because the aggregate was handled from the bottom.

Armco's method of bolted construction made it a simple matter to locate the hoppers at any desired point. When the job was done the ARMCO Liner Plates were removed, nested together and stored in a minimum of space for future use.

There is a type and gage of Armco Plates to meet every tunnel condition. You can order exactly what you need for the job and the chances are you'll be "holing through" ahead of schedule. Write today for information on your specific needs. Armco Drainage & Metal Products, Inc., and Associated Companies, 1365 Curtis St., Middletown, O.



ARMCO

Tunnel Liner Plates

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always busy because

IT DOES SO MUCH SO WELL

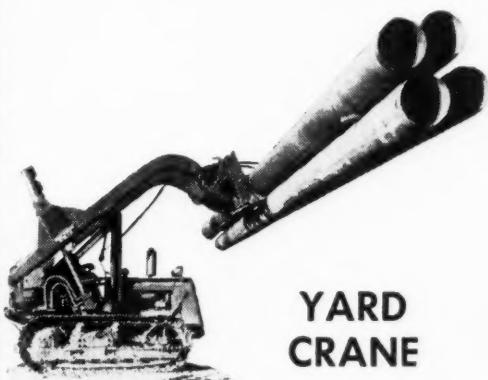
A Bucyrus-Erie DOZER-SHOVEL handles so many digging and materials handling jobs so swiftly and at such low cost that you'll find it's constantly on the job earning money for you!

Quickly convertible

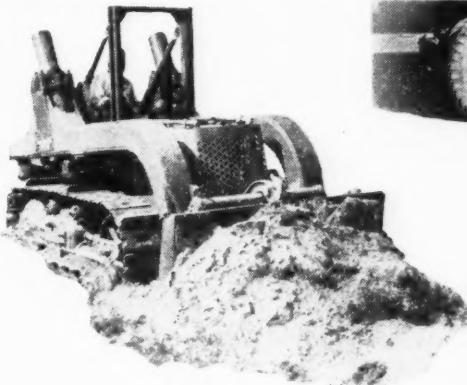
The shovel is easily converted into a bulldozer by interchanging the bulldozer blade with the shovel bucket, a conversion requiring a short time in the field. For crane service you simply swing over the hook on the bucket or blade.

The shovel can be used for heavy excavation and bulk material handling, the bulldozer for cleanup work etc., the crane for lift-about service, almost without interruption.

As YARD CRANE, for general lift-about work of single objects — engines, rails, pipes, etc. — you'll like the convenient crane service (with either shovel or bulldozer) that features high lift to clear gondola car tops, the ability to "turn on a dime" for working in close quarters.

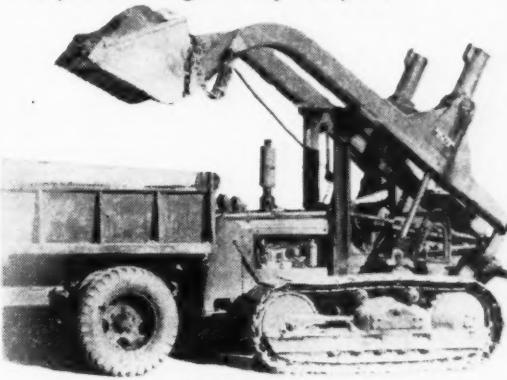


YARD
CRANE



BULLDOZER

As BULLDOZER you'll like the way the blade grades a slope and kicks the load off the blade at the end of the push by utilizing the trip mechanism that dumps the bucket. You'll like the way the bulldozer uses down pressure for fast, hard digging on road maintenance, overburden stripping, airport and highway construction, backfilling, grading etc.



SHOVEL

As SHOVEL you'll like the way the unit gets full capacity loads in a hurry . . . the way the strong lift arms take heavy materials and reach over a truck or pile for loading or piling with minimum spillage. You'll like the fast filling, specially designed bucket that discharges quickly by gravity at a simple pull of the trip lever.

Ask your International TracTrac-Tor Distributor about the DOZER-SHOVEL's many other features too: maintenance of original tractor balance, full front visibility, low overhead clearance, positive down pressure, simple strong design, oscillating tracks.

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See your
INTERNATIONAL
TRACTRACTOR
DISTRIBUTOR

PONY

*Solid
Shank
FEATHERWEIGHT
Shovels*
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**PERFECT
BALANCE**

A new redesigned socket gives to the PONY Solid Shank Shovel the perfect balance which no other solid shank shovel has.

*Equipped
with
SHOCK
BAND*

The famous ABW Shock Band gives to the shovel greater handle strength. This is a patented feature of PONY Solid Shank Shovels.

Ask Your Jobber

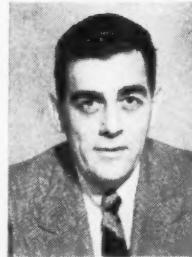


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ABW PRODUCTS

SHOVELS FORKS
SPADES HOES
SCOOPS RAKES
POST HOLE DIGGERS
AGRICULTURAL HANDLES



Appointment of Daniel J. Atwell as New England district manager for the sale of Dresser products to the water industry has been announced. He will cover New Jersey and all of the New England States from the New York office of the Dresser Manufacturing Division located at 122 East 42nd Street, New York, N. Y.

Announcement is made by Oakite Products, Inc., New York, of the appointment of J. C. Leonard as sales manager of its industrial marketing division. He will direct the marketing and servicing activities of the industrial field staff.

Manufacture of the FWD Model M10, which was virtually out of production during the war, is being resumed, according to officials of The Four Wheel Drive Auto Co. The 12-ton model will meet the need of highway departments in the snow-belt for a truck with the "drift-busting" qualities of the pre-war M10 snow removal truck.

Garlinghouse Brothers, construction and industrial equipment distributors and manufacturers, of Los Angeles, have recently divided the organization into three companies. Garlinghouse Brothers, Distributors, will continue as distributors for nationally known equipment manufacturers. The Gar-Bro Manufacturing Co. will continue to produce a complete line of concrete placing equipment; and the Gar-Bro Wheel Co. will manufacture a line of industrial and agricultural pressed steel wheels. All three will operate under the parent control of the original organization.

SHIFT Your Production Parts Problem TO OUR SHOULDERS

We have the plant capacity and the know how . . . are completely equipped to turn out completed parts (threaded or unthreaded) or to do threading only. We specialize in specials, handle complete assemblies.

Single and multiple spindle. Screw machine products up to 3 1/4 inches from steel, brass or other metals.

SPECIAL STUDS

Try us on special studs; machine screws, nuts and bolts; special headed and threaded parts. Threaded rods, 10 to 12 foot length.

Send us your specifications and let us quote.

KRAMER AND KRAMER

3629 MEDFORD STREET
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*Order through Your Jobber
EMBURY MFG. CO., WARSAW, N. Y.*



The Barium Steel Corp. announces the acquisition of 100 percent control of the Wiley Equipment Co. of Port Deposit, Md., and the Wiley Manufacturing Co. of Mountville, Pa., manufacturers and fabricators of cranes, barges, hoisting and loading equipment. The operations of both companies will be coordinated with and supplement the activities of the Clyde Iron Works, Duluth, Minn., a subsidiary of the Barium Steel Corp.

The following Canadian sales agents for Lima shovels, cranes and draglines have been appointed: Armclo Drainage & Metal Products of Canada, Ltd., Winnipeg, Manitoba; Equipment Sales & Service Ltd., Toronto, Ont.; Automotive Products, Montreal, Que.; Dietrich-Collins Equipment Ltd., Vancouver, B. C.



Joseph W. Sargent, formerly manager of the Eastern region of Worthington Pump and Machinery Corp. construction equipment division

has accepted the position of manager of Construction Equipment Sales for the American Air Compressor Corp., 48th Street & Dell Avenue, North Bergen, N. J.

Floyd Stevens, former superintendent of maintenance for the Michigan State Highway Department in Berrien County, Mich., has joined the International Salt Co., Inc., as a field engineer to assist in the company's program to maintain highways free of snow and ice by spreading rock salt on them during winter storms.

Appointment of **Fred S. Cresswell** as manager of National Clay Pipe Manufacturers, Inc., with offices in Washington, D. C., has been announced.

The Celotex Corp. of Chicago has acquired The Weaver-Wall Co., of Cleveland, Ohio, manufacturers of asphalt shingles, roofing and siding products. Acquisition of this company is part of an expansion program in which Celotex plans to increase production of building materials.

A motion picture about cotton canvas for use in industry and commerce, depicting especially the modern methods of treatment to provide protection against fire, water, weather and mildew, presented by Philadelphia Textile Finishers, Inc., Norristown, Pa., is available without charge through William L. Barrell Co., Inc., (selling agents) New York, N. Y.

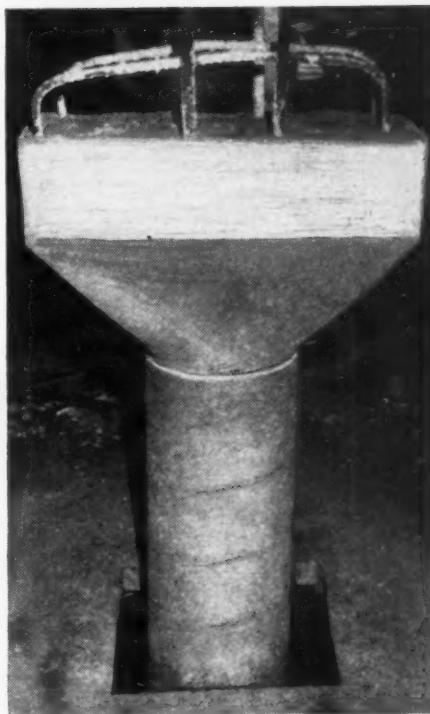
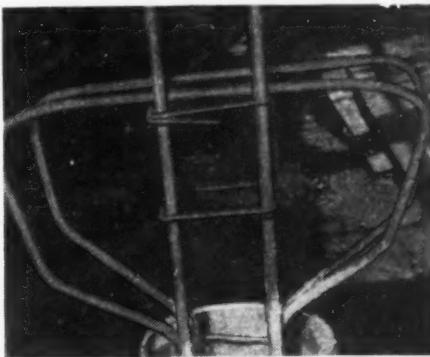
INGENUITY PAYS OFF

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By-passing usual wood column and steel construction, contractor conformed supporting columns with 12" Sonotubes—built cap-forms with reinforcing as shown and poured his concrete with perfect results. Cap carries a 12" I steel beam, reinforced 8" concrete floor with very heavy machinery load.

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Sonotube

THE LAMINATED FIBRE TUBE FOR POURING
CONCRETE PIER AND COLUMN FORMS

Sonotubes are an emergency wartime product that have developed widespread peace-time applications. Contractors that used them in forming piers in cantonment construction are adapting where piers up to 10' high and columns up to 14' are indicated. No wood forming is necessary. Sonotubes are easily cut to lengths by hand, on the job.

Widely used and recommended for:

Pier and Dock Construction
Platform Work
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Single Story Columns

INSIDE DIAMETER					
8"	9"	10"	11 1/4"	12"	13 1/4"
50.26	64	78.54	100	113.1	144

SQUARE INCHES

50.26 64 78.54 100 113.1 144

SMALLER SIZES AVAILABLE

Up to Twenty-Four Feet Long

SONOCO PRODUCTS COMPANY

HARTSVILLE, S. C.
ROCKINGHAM, N. C.

MYSTIC, CONN.
GARWOOD, N. J.
LOWELL, MASS.

puts the weight . . .
where it's needed!



. . . the 3-axle tandem

3-AXLE TANDEMS

9 to 17 tons

*

TANDEM ROLLERS

3 to 14 tons

*

3-WHEEL ROLLERS

6 to 12 tons

*

TRENCH ROLLERS

SURFACE irregularities vanish under the 3-axle tandem. As any one roll contacts a high spot, it automatically "borrows" additional weight for greater compaction. This, together with exclusive Buffalo-Springfield synchronized steering of the two guide rolls makes possible smoothness of rolling not possible with any other equipment. Ask your distributor for details.

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MASTER COST-SAVING EQUIPMENT—FOR IMMEDIATE DELIVERY



Gas or Electric Concrete Vibrators
(Catalog No. 689)



Hand Tools for operating from all
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BIG-3 for Generation,
Tool Operation and
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Portable Gas-Electric
Generator Plants. Sizes 500 to 17000
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General Purpose
Floodlights



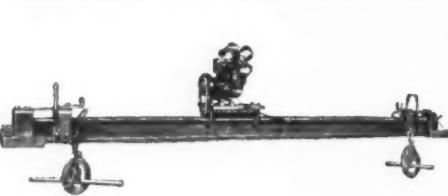
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Electric
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Vibratory Concrete Finishing Screed. Sizes 6' to 30'
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"Turn-A-Trowel"
for trowelling
concrete
Sizes 48" or 34"
(Catalog
No. 685)



Send for illustrated catalog on any item to
MASTER VIBRATOR COMPANY
DAYTON 1, OHIO

Irwin McNiece has been named assistant district superintendent of service and erection for the Los Angeles district of the Allis-Chalmers Mfg. Co., Milwaukee, Wis., according to an announcement by Leon A. Watts, general superintendent of service and erection for the company. Mr. McNiece joined Allis-Chalmers in 1912, working in its service and erection department and as a special representative for the company's hydraulic department out of Salt Lake City.

C.I.T. Corp., specialists in industrial financing, announces the opening of a regional office in Atlanta at 223 Peachtree St., N.E., under the management of Edward H. Mayer, assistant vice president.

The Board of Directors of Industrial Brownhoist Corp., announces the retirement of **James B. Hayden** as vice-president in charge of sales and the election of **Max Riebenack III** to this position. The following changes in the sales organization were also announced: **H. D. Wright**, director of scales, Eastern Seaboard, New York City; **C. H. White**, director of sales, South and Western U.S., Chicago; **James A. Peppard**, district sales manager, Central region, Cleveland; **A. P. Lyvers**, district sales manager, Chicago; **Stanley See**, district sales manager, Philadelphia.

As a part in its program to help solve the heat insulation problems of industry, the Magnesia Insulation Manufacturers Association, composed of the manufacturers of 85-percent Magnesia heat insulations, has just released the first issue of its new publication, the **M.I.M.A. News**. Purpose of the new publication is to serve as a helpful medium of contact between the users and manufacturers.

Construction has been started on another unit in the plant expansion program of The Heil Co. This \$500,000 addition to Plant 3 at Milwaukee will add over 110,000 sq.ft. of manufacturing space to its 52-acre layout. Addition of the wing will give a straight-line production area over 1/3 mi. long with rail facilities through its entire length. Another 30,000-sq. ft. building is under construction at Hillside, N.J., and a three-story sales office building has been completed at Plant 1, Milwaukee.

Negotiations by Carnegie-Illinois and other subsidiaries of the U. S. Steel Corp. for a license to manufacture and sell the Inland Hi-Bond reinforcing bar for concrete construction have been completed, according to H. H. Straus, vice-president of the Inland Steel Co., responsible for the development of the bar. As a result of the licensing agreement, he said, the reinforcing bar will soon be available in greater quantities throughout the United States.

W. B. Elliott, president of the Insley Manufacturing Corp., Indianapolis, Ind., has announced the appointment of **L. C. Gerow** as manager of the company's parts and field service department, succeeding the late Charles A. Menefee.

Willard M. Broxham has been named manager of sales for the fabricated plate division of the Graver Tank & Mfg. Co., Inc., with headquarters at the general offices in East Chicago, Ind.

Meili-Blumberg Corp., manufacturers of industrial, construction, maintenance and material handling equipment announce the appointment of **J. Frank Sims** to the newly created position of sales manager.

H. M. Alexander, manager of the sales technical service department of Libbey-Owens-Ford Glass Co., Toledo, Ohio has been named assistant to George P. MacNichol, Jr., vice-president in charge of sales, succeeding the late North A. Wright. The position will include supervision of the product promotion department and liaison work between sales and manufacturing departments, as well as management of the sales technical service department.

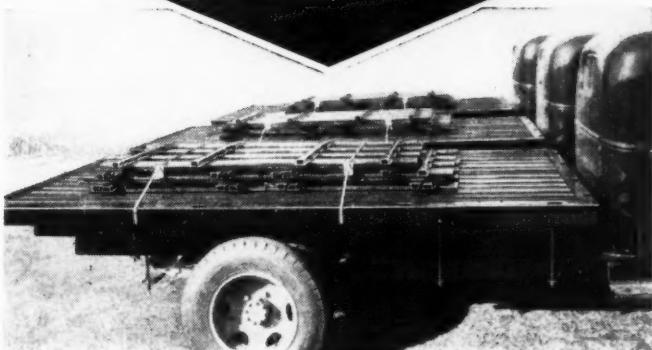
W. W. Wyre has been appointed district sales manager, New York City, of the Lehigh Portland Cement Co. Mr. Wyre was formerly assistant sales manager at Chicago.

Ash Grove Lime & Portland Cement Co., 101 West Eleventh St., Kansas City, Mo., announces the appointment of **Purd B. Wright, Jr.**, as sales manager, Kansas City Office.

USED THE WORLD OVER



BEST
IS THE
WORD FOR
PERFECTION
BODY and HOIST
SERVICE



Write for name of nearest Perfection Distributor

THE PERFECTION STEEL BODY COMPANY
GALION, OHIO

PERFECTION
STAKE and DUMP BODIES
HYDRAULIC HOISTS



FOR ANY TRUCK
STANDARD or SPECIAL UNITS
IN ALL SIZES • FOR ANY USE

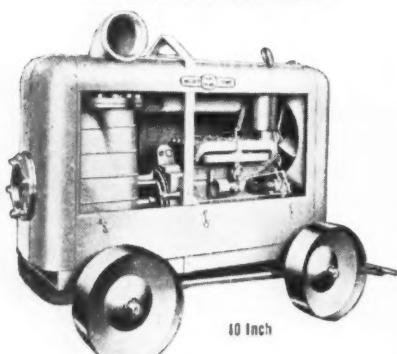
JAEGER BUILDS BETTER PUMPS INSIDE and OUT



Modern enclosures protect engine efficiency...add longer life

Experienced contractors buy far more Jaeger "Sure Primes" than any other make of pump. They know that all "Sure Prime" pumps are better engineered, conservatively rated, powered with high grade engines and enclosed in modern housings that keep those engines dry, clean, quick-starting and smooth running for extra thousands of hours of low cost service.

Protected Yet Accessible



Instant opening side panels admit to all operating controls. Enclosures are also designed to lift off or swing open for complete access when desired. One of many exclusive Jaeger advantages.



Capacities 3000 to 240,000 g.p.h.

Only Jaeger Offers All These Features:

Inherent priming action plus "jet" priming—fastest and doubly sure . . . "Lubri-Seal," accessible for inspection . . . Self-cleaning shells . . . Replaceable liners or seal rings . . . Pumps individually tested and certified for performance.

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NEW YORK 17, N. Y. 226 N. La Salle St.
235-38 Martin Bldg.
BIRMINGHAM 1, ALA.

D. E. McGuire, assistant to the general works manager for Great Lakes Steel Corp., has been appointed chief engineer, according to an announcement by Julius A. Clauss, vice president in charge of engineering.

The Clay Sewer Pipe Association, Inc., announces the addition to its technical staff of **Edward A. Walker** who has been connected with the Pennsylvania Department of Health since 1937, and prior to that time was with the Pennsylvania R.R. Co. and John F. Casey Co., Pittsburgh, Pa.

Richard C. Haury has been appointed Philadelphia resident manager for The Robinson Clay Product Co. He will direct all sales activities in the Philadelphia area.

G. A. Sabin, director of advertising, The Colorado Fuel and Iron Corporation, has announced the appointment of **Sidney E. McCrum** as advertising manager of Wickwire Spencer Steel Division.

Here are 10 basic books of day-in-day-out value in ONE low-priced volume

This book is carefully planned to give the information needed by men who actually plan, select, design, and construct civil engineering structures and projects—in one compact volume and at a reasonable price. This edition blends theory, practice and fundamentals equally; and answers your questions in any division of civil engineering.

CIVIL

ENGINEERING

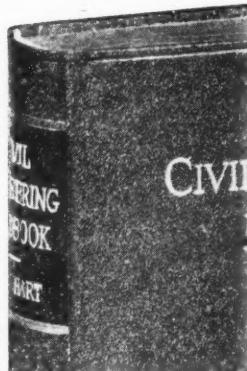
HANDBOOK

Editor-in-chief: L. C. Urquhart, Professor of Structural Engineering, Cornell University. 2nd Edition. 870 pp., illus., \$6.00.

Here are the fundamentals of the various subdivisions of civil engineering for the use of practicing engineers confronted with specific problems, particularly those outside their specialized fields. The book offers you ten complete treatises on the ten major subdivisions of civil engineering, each written by a specialist of international reputation in his field.

10 BIG SECTIONS

Surveying
Railway and Highway Engineering
Mechanics of Materials
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Stresses in Framed Structures
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Concrete
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Send me Urquhart's Civil Engineering Handbook for 10 days' examination on approval. In 10 days I will send \$6.00, plus few cents postage, or return book postpaid. (Postage paid on orders accompanied by remittance.)

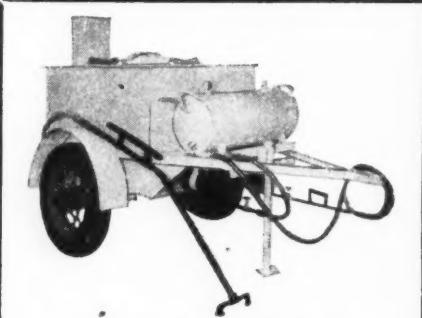
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Gasoline Engine and
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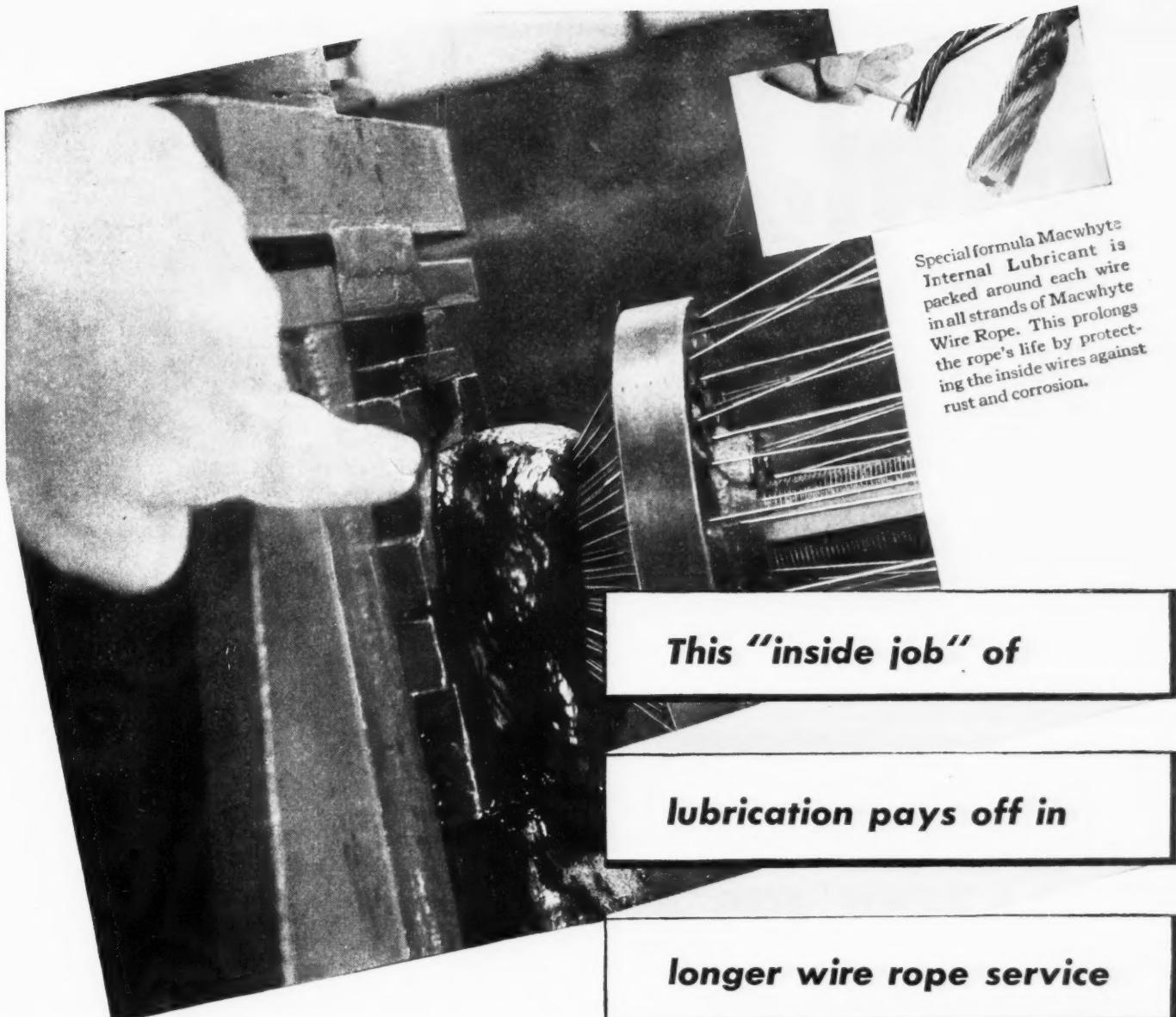
Portable—Stationary

Write for Circulars

White Mfg. Co.

ELKHART

INDIANA



Special formula Macwhyte Internal Lubricant is packed around each wire in all strands of Macwhyte Wire Rope. This prolongs the rope's life by protecting the inside wires against rust and corrosion.

This "inside job" of

lubrication pays off in

longer wire rope service

Because it's thoroughly lubricated *on the inside*, Macwhyte Wire Rope lasts longer on your equipment. Our heavy, tenacious, special formula lubricant gives long-lasting protection. It is force-fed to wires as they are being closed into the strand. All wires, both inside and outside, are thoroughly encased in lubricant.

Macwhyte Internal Lubricant improves the sliding action of the wires as they move

in bending around sheaves and drums. It gives outside protection—but even more important, it protects the unseen inside wires which constitute the reserve strength and safety of the rope.

Extra life, assured by superior internal lubrication, quality materials and precision manufacture, makes Macwhyte Wire Rope your best buy.

TM, 1946

MACWHYTE WIRE ROPE

Manufactured by Macwhyte Company

2941 Fourteenth Avenue, Kenosha, Wisconsin

Mill Depots: New York • Pittsburgh • Chicago • Minneapolis • Fort Worth
Portland • Seattle • San Francisco • Los Angeles
Distributors throughout the U. S. A. and other countries

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MACWHYTE PREformed and Non-PREformed Internally Lubricated Wire Ropes . . . MONARCH
WHYTE STRAND Wire Rope . . . Special Traction Elevator Rope . . . ATLAS Braided
Wire Rope SLINGS . . . Hi-Fatigue Aircraft Cables, Assemblies, Tie-Rods . . . Stainless Steel
Wire Rope . . . Monel Metal Wire Rope, Galvanized Wire Rope.

Make MACWHYTE your headquarters for WIRE ROPE AND SLINGS



Ready To Rush Construction Jobs

Reliance

Ready to ship to your job
NOW — RELIANCE Construction Equipment offers you important improvements in complete Crushing, Screening, and Washing Plants. Look into the smooth operation and rugged construction of the RELIANCE LINE.

Write for the latest
RELIANCE Bulletins.



RELIANCE PRODUCTS

Rock Crushers, Bucket Elevators, Revolving Screens, Storage Bins, Pulverizers, Chip Spreaders, Heating Kettles, Bin Gates, Feeders, Belt Conveyors, Grizzlies, Air Separators, Sand & Gravel Spreaders, Wash Boxes.

UNIVERSAL ROAD MACHINERY CO.

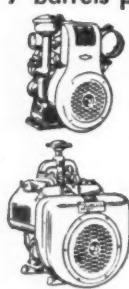
Kingston, N. Y., U. S. A.

DISTRIBUTORS IN ALL PRINCIPAL CITIES OF U. S. A.

UNLOADING JOB By WISCONSIN Air-Cooled ENGINE

This 100 Bbls. capacity bulk materials transport, operating within the road laws of the State of Michigan, employs a Wisconsin Heavy-Duty Air-Cooled Engine for operating the spiral unloading conveyor, at a discharge rate of 5 to 7 barrels per minute. In this operation the engine must overcome a difficult initial starting load, due to cement packing at the conveyor.

This is just another typical construction service job that calls for rugged, heavy-duty serviceability from the power unit . . . supplied in generous measure by all Wisconsin Air-Cooled Engines within their respective power ratings (2 to 30 hp.).



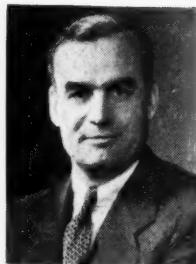
Most
H.P. per
pound

WISCONSIN MOTOR

Corporation

MILWAUKEE 14, WISCONSIN, U. S. A.

World's Largest Builders of Heavy-Duty Air-Cooled Engines



C. M. Taylor has been elected executive vice-president of The Lincoln Electric Co. by the board of directors. Mr. Taylor has been with The Lincoln Electric Co. since 1916.

Executive appointments announced by **Gen. Brehon Somervell**, president of Koppers Company, Inc., include those of **J. N. Forker** as general manager of the new Tar Products Division and **Dan M. Rugg** as general manager of the new Chemical Division, both with offices in Pittsburgh. Other appointments announced include **W. Reed Morris** as general manager of the New Gas and Coke Division, Kearny, N. J.; **J. F. Byrne** on special assignment for the Engineering and Construction Division, and **M. T. Herreid** as manager of Kopper Plants at Granite City, Ill., and St. Paul, Minn. **George M. Walker** is made manager of the new Control Section, attached to the president's office, and **J. C. Macon, Jr.**, is made general sales manager of the Tar Sales Department. **T. C. Keeling** is sales manager of the new Chemical Division.

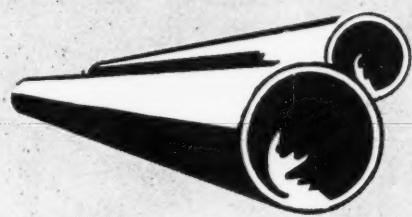
Fayette Leister, veteran of a quarter-century of service as an anti-friction bearing engineer, has been elected by directors of The Fafnir Bearing Co., New Britain, Conn., as vice-president in charge of engineering.

D. E. Fricker has returned to Le Roi Co., Milwaukee 14, Wis., as assistant to the advertising manager, to handle sales promotion work and trade shows.

Farnes and Martig, Inc., have been appointed sales and service representatives for the state of Oregon for the Wheelco Instruments Co., Chicago, Ill.

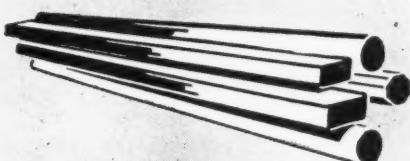
Quality Materials Co., 344 Delaware Ave., Buffalo, N. Y., has been appointed general distributor for The Johnson-March Corporation construction products, which include specialized waterproofing compounds, concrete additives, and curing compounds for the Middle West, North Eastern and New England states.

BARGAIN PRICES ON



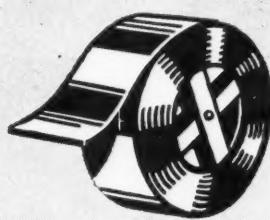
TUBING

Carbon, Alloy and some Stainless.
Both Welded and Seamless.



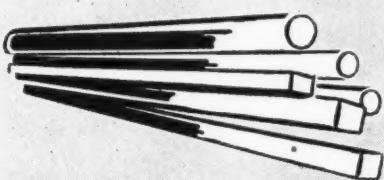
TOOL STEEL

Water-hardening, Oil-hardening and
High Speed Grades.



STRIP STEEL

Hot Rolled, Cold Rolled, Carbon,
Alloy, and Stainless.



BAR STEEL

Hot Rolled and Cold Finished in Car-
bon, Alloy, and Stainless.

All steel is subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the material offered herein.

EXPORTERS: The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.

NO WAITING FOR HIGH GRADE *Steel*

Alloy steel billets, blooms, bars, plates, are all immediately available through your War Assets Administration. Bars include rounds, squares, flats and hexagons. Suitable for substitute and re-rolling purposes.

Low prices on this high grade steel make it practical for low-cost products.

For complete information on steel send this coupon to your nearest WAA Regional Office:

TO: WAR ASSETS ADMINISTRATION

Please send me, without obligation, full information on the availability, condition and location of the following checked items:

1. Billets, Blooms, <input type="checkbox"/> etc.	4. Stainless Steel <input type="checkbox"/> Bars, Strips, and <input type="checkbox"/> Sheet Standard Types
2. Carbon and Alloy <input type="checkbox"/> Bars	5. Valves and Fittings <input type="checkbox"/>
3. Wire Rope and Air- craft Cable <input type="checkbox"/>	6. Mechanical Tub- ing, Carbon, Alloy, <input type="checkbox"/> and Stainless

NAME.....

FIRM.....

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157-8

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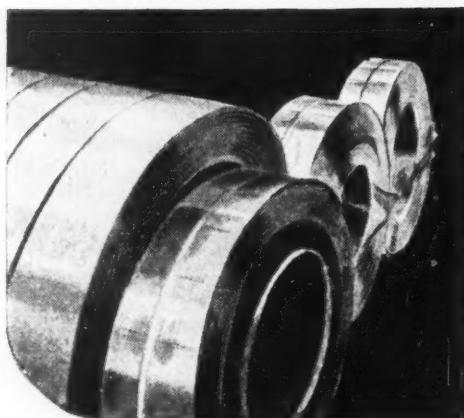
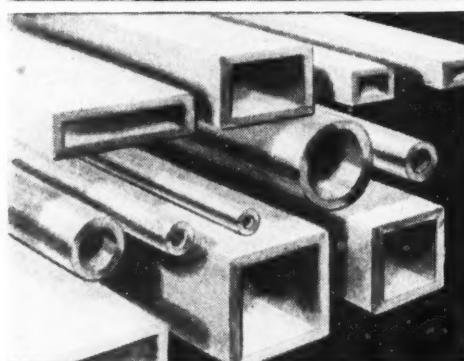
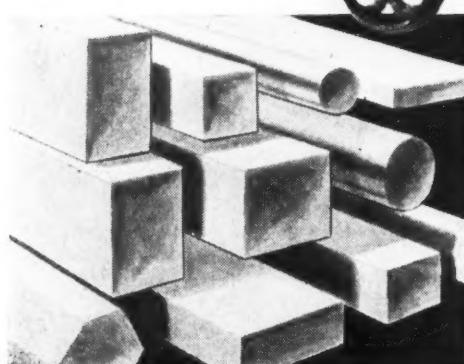
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157-8

NOW

Brass Mill Products Quickly!



A large supply of brass mill products is now offered to the trade at unusually low prices. The entire inventory may be fabricated by normal production methods and is being sold in production quantities.

The inventory includes: Free Turning Brass Rod—1 inch diameter and larger; Copper and Brass Tubing—3 inch O.D. and larger; Naval Brass Rod—various diameters; Aluminum Bronze, Manganese Bronze and Silicon Bronze in various shapes.

This material is offered in the following sequence as provided by law: (1) Certified Veterans of World War II; (2) Subsequent priority claimants; (3) Non-priority purchasers. Federal agencies have had opportunity to fulfill their needs. VETERANS OF WORLD WAR II should apply to their nearest WAA Regional Office for certification; the case number assigned and the location of the certifying office must be stated in a Veteran's offer to purchase.

EXPORTERS: The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.

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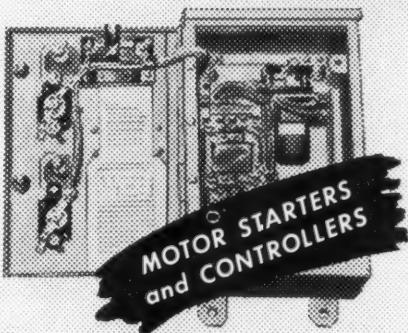
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ELECTRICAL SUPPLIES

for

JOBBERS-CONTRACTORS-INDUSTRY



General Electric, Westinghouse, Cutler-Hammer, Ward Leonard and other makes, built to both commercial and Navy specifications. 115 and 230 volt DC; 220 and 440 volt AC; 60 cycle, 3 phase. Drip-proof, water-proof, manual and magnetic types. Unused and used.



ATTACHMENT PLUGS

Composition and rubber in a variety of grips. Fine quality.



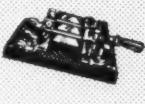
CONNECTOR BODIES

Bakelite and composition, parallel slots, "T" slots, rugged construction.



KNIFE SWITCHES

Fuse, non-fuse - 2 and 3 pole - single and double throw.



CONDUIT FITTINGS

All types, for all purposes.



The electrical supply items shown here are but a fraction of the total surplus inventory. Use the coupon to indicate other items in which you are interested.

A huge inventory of government surplus electrical supplies is now available to dealers, jobbers, contractors and industrial users. Many scarce items are included in this sale—items which continue to be in short supply and are now offered at prices well below today's market for similar products.

Act Now —secure needed supplies

and build up depleted stocks. Simply fill in the attached coupon and mail to your nearest War Assets Administration Regional Office.

Send this coupon to your nearest WAA Regional Office:

I am interested in the following:

ITEMS

DESCRIPTION

Name.....

Firm.....

Address.....

City..... State.....

691-3

All electrical supplies are subject to priorities. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the material offered herein.

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691-3



TAP-PURE
IN
taracúa

MOBILE WATER PURIFICATION

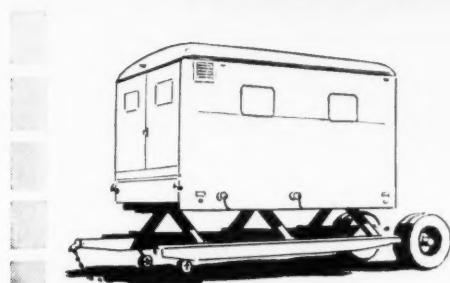
To the men who are again spreading over the world to search the jungles, build roads to out-of-the-way places, dig in ancient ruins, a mobile water purifier means protection against disease from impure water. These truck or trailer mounted Water Purification Units are designed to accompany such men far from the safeguards of civilization. They are the best—and often the only—assurance of safe drinking water in the remote places of the world. They can be taken wherever a wheeled vehicle can go.

For: Oil companies, mining companies, road building crews, lumbering operations, expeditions, heavy construction jobs.

Also of value to: City Health Departments, State Health Departments, Red Cross, Disaster Control Commissions, Departments of Agriculture, State Forestry Departments, Boy Scouts, Girl Scouts, Sea Scouts.

All water purification equipment is subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase material offered herein.

Exporters: The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.



**FOR IMMEDIATE SALE
AT REDUCED COST**

**Truck type self-contained
Water Purification Unit**

These water purifiers are mounted on trucks or trailers, ready for immediate use. They do not require trained operating personnel, they are cleaned easily and with little loss of operating time.

Capacity 1,200 to 6,000 gallons per day.

Some of the available types:

Distillation Unit—Cleaver-Brooks model, gasoline engine driven, trailer mounted, 200 G.P.D.

Purification Unit—Wallace & Tiernan make, mounted on GMC 2½ ton truck, 6 x 6 chassis, 100 CFM.

Distillation Unit—Cleaver-Brooks make, gasoline engine driven, trailer mounted, 2,000 gals. per day.

Most of this equipment is located at Charlotte, N. C., New Orleans, La., Richmond, Va., and San Francisco, Calif.

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QUICK TURNOVER ITEM FOR EQUIPMENT DEALERS

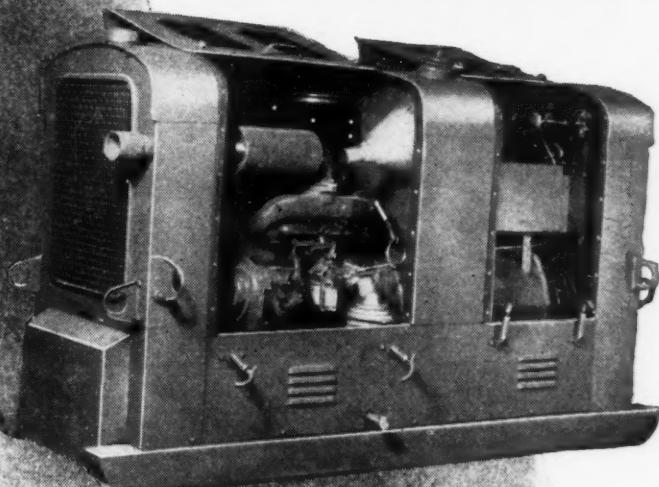
3KVA

PORTABLE POWER PLANTS

\$480

ONLY

(LESS SPECIAL DEALER DISCOUNT)



There are electric power units that will move right off your floor at a comfortable profit.

The 3KVA unit is the size and type power plant in demand by farmers, dairymen, poultry ranchers and hatcheries, homesteaders, small shops. They are a necessity to modern living where public utility power lines are not available—and are invaluable as stand-by units during temporary interruptions of regular electric service.

At the low re-sale price of \$480.00 you give your customers the best, while insuring your own margin of profit. The units are new—compact—versatile—built to endure. Investigate immediately through your War Assets Administration Regional Office.

SPECIFICATIONS OF THE 3KVA ELECTRIC POWER UNIT:

GENERATOR:

3KVA, 115, 120 or 125 volts, 3 phase, 60 cycles, 1200 RPM.

ENGINE:

Gasoline; 4-cylinder (Hercules Model ZX8); 9.5 Horsepower at Generator Speed; $2\frac{5}{8}$ " bore, 3" stroke; 64.9 cu. in. displacement.

EQUIPMENT:

Starting Motor and Generator for use with vehicle-type, 6 volt battery (but battery is not included); Oil Filter; Oil Bath Air Cleaner; Manual Choke Control; Gas Gauge on Tank; Gasoline Strainer.

CONTROL PANEL:

Main Switch; Circuit Breaker and Fuses; Frequency Meter; Voltmeter and Ammeter, Charging Ammeter, Oil Pressure Gauge.

ELECTRICAL CHARACTERISTICS:

Wiring, lights, small motors (either three-phase or single-phase) and appliances served from these units can be used on most power company lines.

WEIGHT AND DIMENSIONS:

Shipping Weight 900 lbs.; (Crated) 4' 10" long, 2' 6" wide and 3' 2 $\frac{1}{2}$ " high.



Contact your War Assets Administration Regional Office for complete information on the availability of the electric power unit you need.

Although this material has previously been offered to priority claimants, 10 per cent of the merchandise has been reserved to fulfill any further needs of priority claimants including VETERANS OF WORLD WAR II who are invited to contact the Regional Office serving their area.

EXPORTERS: The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.

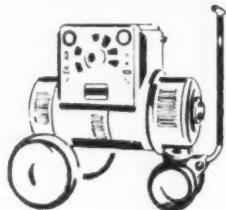
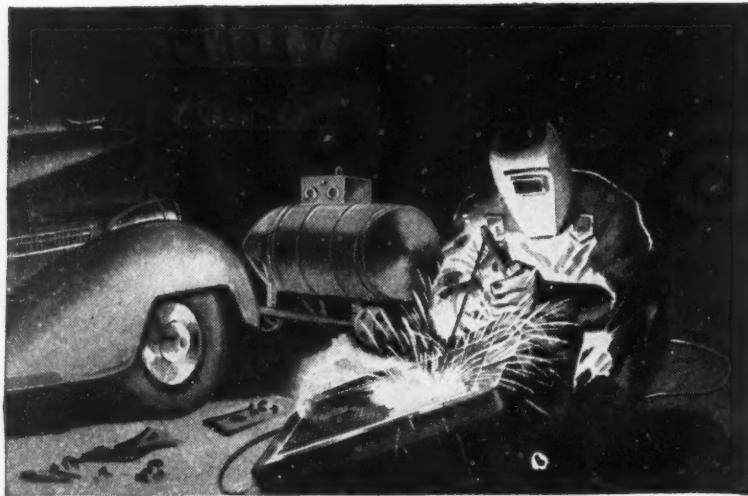
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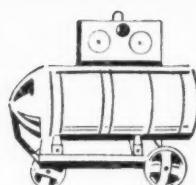
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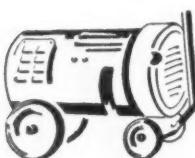
655-3



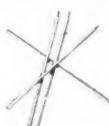
Hobart—Standard models of this make available in large quantities and most ratings.



Lincoln—In all models and most ratings. Many in the popular 300—400 Ampere size.



Westinghouse—Portable models available in limited quantities.



Electrodes and Welding Rods—Millions of pounds available in all types and sizes.

For full information clip and mail this coupon to:

War Assets Administration:
Please send me complete information on the availability, condition and location of the following types of equipment.

... Hobart Arc Welders ... Westinghouse Arc Welders
... Lincoln Arc Welders ... Electrodes and Welding Rods
... Arc Welding Equipment AC DC
... Electric Motor Driven: Volts Phase Cycles
... Transformer Type: Volts Phase Cycles

Name _____
Firm _____
Address _____
City _____ State _____

HOW TO GET ARC WELDERS IN A HURRY!

IT'S EASY FOR THE SMALL BUSINESSMAN TO GET THEM AT A SAVING.

Hundreds of arc welders are available to small businesses for immediate delivery. Some are unused. Some are used. All were made by well known manufacturers.

Now they are offered for sale at real bargain prices.

These are the type welders needed by garages, repair shops and maintenance shops. The large inventory includes welders of 200, 300 and 400 Ampere Rating, either DC or AC. They are located at various points throughout the country and may be inspected before purchase.

To obtain complete information on availability, location and condition of the equipment you want, fill out the coupon and send it to your nearest War Assets Administration Regional Office.

All Arc Welders are subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the material offered herein.

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Featuring additional Products, Specialties and Services for the Construction Industry

**COMPLETE
WELL POINT SYSTEMS
WILL DRY UP ANY
EXCAVATION**
Faster—More Economically
Write For Job Estimate and 32 page Catalog
C * M P L E T E
MACHINERY & EQUIPMENT CO., Inc.

36-36 11th St., Long Island City, N. Y.
Tel. IRonside 5-4600
Branch: Third Avenue & Adams St., Gary, Indiana
Telephone: Gary 23983



STERLING MACHINERY CORPORATION
405 Southwest Blvd., Kansas City, Mo.

This WHERE TO BUY Section

supplements other advertising in this issue with these additional announcements of products and services essential to official and economical operation in the construction industry.

Waterproof with Formula No. 640

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no fussing—no membranes. Write for technical data—free sample.

HAYNES PRODUCTS CO., OMAHA 3, NEBR.

SEARCHLIGHT SECTION

LEGAL NOTICE

STATEMENT OF THE OWNERSHIP, MANAGEMENT,
CIRCULATION, ETC., REQUIRED BY THE
ACTS OF CONGRESS OF AUGUST 24,
1912, AND MARCH 3, 1933

Of Construction Methods published Monthly at New York, N. Y., October 1, 1946.

State of New York } ss.
County of New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared J. A. Gerardi, who, having been duly sworn according to law, deposes and says that he is the Secretary of the McGraw-Hill Publishing Company, Inc., publishers of Construction Methods, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the name and address of the publisher, editor, and business manager is: Publisher, McGraw-Hill Publishing Company, Inc., 330 West 42nd Street, New York 18, N. Y.; Editor, Waldo Bowman, 330 West 42nd St., New York 18, N. Y.; Managing Editor, None; Business Manager, Albert E. Paxton, 330 West 42nd St., New York 18, N. Y.

2. That the owner is: McGraw-Hill Publishing Company, Inc., 330 West 42nd St., New York City. Stockholders holding 1% or more of stock: James H. McGraw, 330 West 42nd St., New York City; James H. McGraw, Jr., 330 West 42nd St., New York City; James H. McGraw, Jr., Curtis W. McGraw and Edwin S. Wilsey, Trustees for Harold W. McGraw, James M. McGraw, Jr., Donald C. McGraw, Curtis W. McGraw, all of 330 West 42nd St., New York City; Edwin S. Wilsey and Curtis W. McGraw, Trustees for James H. McGraw, 3rd, Madison, New Jersey; Curtis W. McGraw, 330 West 42nd St., New York City; Donald C. McGraw, 330 West 42nd St., New York City; Mildred W. McGraw, Madison, New Jersey; Grace W. Mehran, 536 Arenas St., La Jolla, Calif.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing all the full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

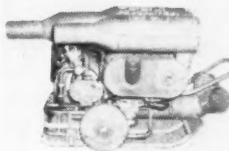
J. A. GERARDI, Secretary.

McGRAW-HILL PUBLISHING COMPANY, INC.
Sworn to and subscribed before me this 24th day of September, 1946.

[SEAL] ELVA G. MASLIN
(My commission expires March 30, 1948.)

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